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PLUMBER & STEAMFITTER

and Sanitary Engineer of Canada

THE MACLEAN PUBLISHING COMPANY, LIMITED, PUBLISHERS

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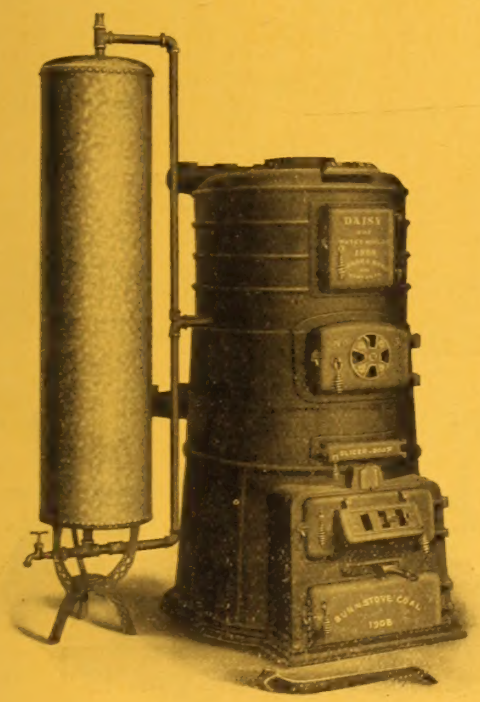
"It's Just as Good"

as

The Daisy



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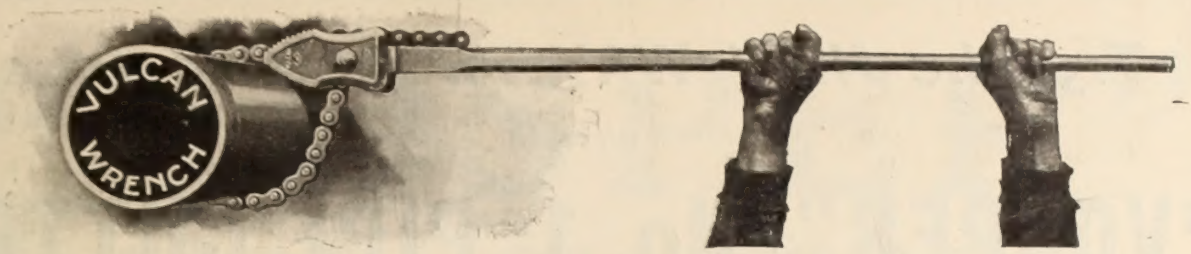

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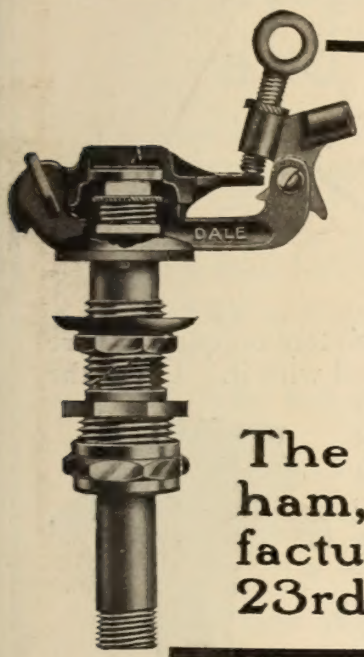

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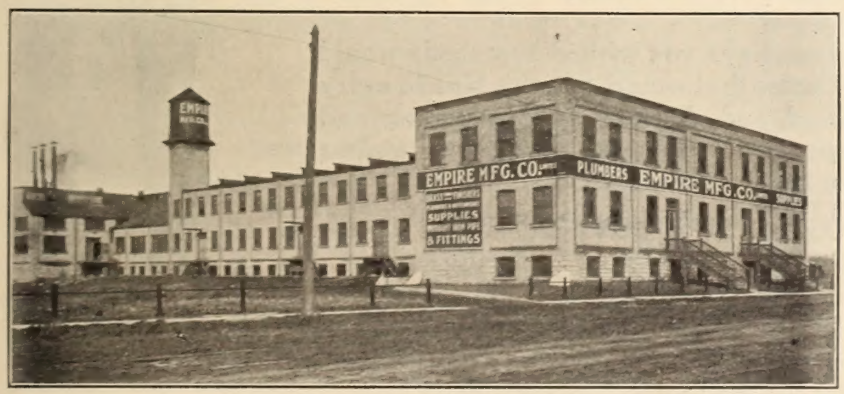

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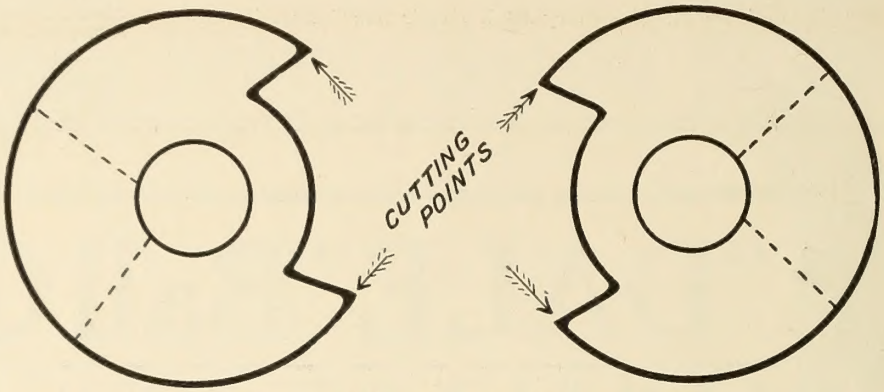

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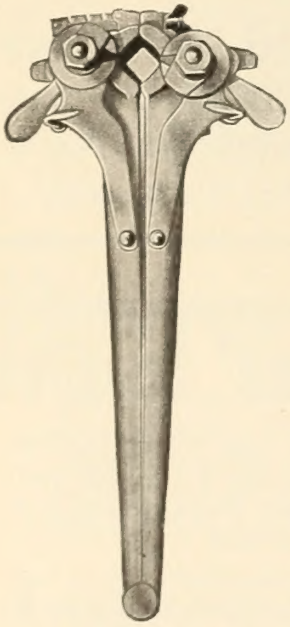

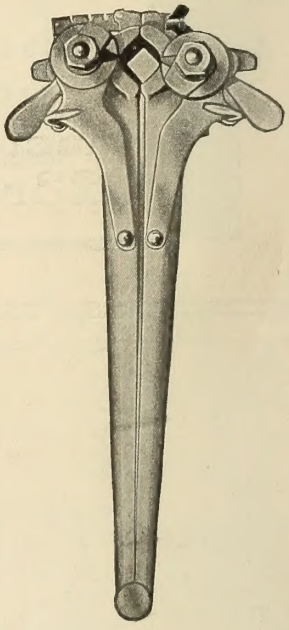

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YOU SAY:---Naturally I know of these losses, but I have made money without your Cutters.

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1 Man makes a cut in 3 minutes
1 Man cuts 20 cuts per hour
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15 hours' time at $0.20 per hour....$3.00
Reaming 300 pieces 5 hours at $0.20.. 1.00

Cost.....$4.00

(Note—No extra cost included for extra wheels or time lost in split pipe or time lost in making crooked cuts.)

***Time--*"VOSPER" Pipe Cutters, which cut the Pipe and Save Reaming.**

300 Cuts:
1 Man cuts a pipe in 2 minutes
5 hours saved at $0.20.....$1.00
Reaming saved 1.00

Amount saved on 300 cuts.....$2.00

(Note—No extra cost included for grinding cutters (if needed). No extra cutters needed, as same will last over a year. No splits in pipe, as it is impossible to do so, and no time lost making crooked cuts, as this is also impossible to do with—**"VOSPER" Pipe Cutters.**

ADVICE:—If you do not have one of the **"VOSPER" Pipe Cutters**---"The Cutters that Cut"---you will be paying for one just the same by using old methods, and your loss will continue to run on when you might have saved the leakage, which is money. Can you afford to be without a **"VOSPER" Pipe Cutter?**

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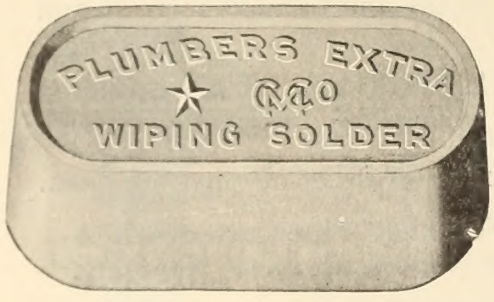

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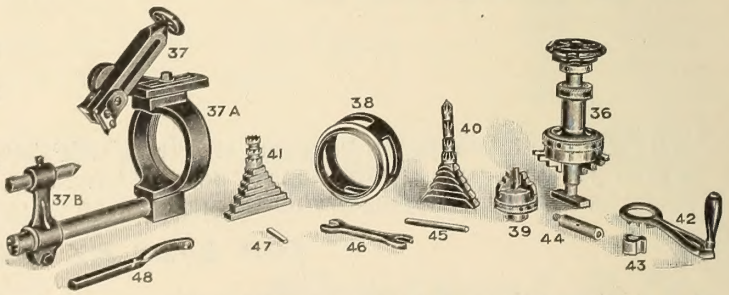

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Circulating amongst Plumbers, Steam, Hot Water and Gas Fitters, Sanitary Inspectors, Heating and Ventilating Engineers, City Engineers, Boards of Health, Architects, etc.

TORONTO, JANUARY 1, 1910

ABUSE IS NOT ARGUMENT.

The Toronto Globe must have been hard hit by the editorial in The Plumber and Steamfitter of Dec. 15, as in its issue of Dec. 21 it devotes over half a column to an editorial abusing this paper and master plumbers generally. By deliberate misrepresentation, it builds up a straw man which it tears to pieces, manufacturing its own evidence in its attempts to justify itself. Finding this insufficient, however, it charges this paper with serving the interests of employing plumbers, rather than the trade as a whole, insinuating that this paper would aid dishonest master plumbers in breaking any law established with the intention of setting a higher standard of plumbing work. The Globe's editorial is so untruthful and unfair that we reproduce it entire to show our readers how devoid of argument it is :

"In discussing the official supervision of plumbing, The Plumber and Steamfitter clears the ground by now demanding only the examination, mechanical and scientific, of contracting plumbers. A sufficient answer to this is the obvious fact that such an examination would be utterly and absolutely worthless and useless, so far as protecting or safeguarding the public is concerned. A contracting plumber who is a trained mechanic and a learned hydraulic engineer is just as likely to avail himself of cheap material and cheap workmanship and profit by his dishonesty as the contracting plumber who is purely and simply a business man. That settles the question, so far as the public interest is concerned. The interference demand could be justified only by necessity in safeguarding the public. The Plumber and Steamfitter has not so much as attempted to show how an examination could protect the public in the least degree. The only source of danger is the dishonesty of the contracting plumber, and of the house-owner who wants cheap and imperfect work. The only safeguard is the inspection of the work at its various stages and after it is completed. This would be quite as necessary if the useless examination were required as it is now.

"It is not necessary to cite the case of the plumber's widow or any of the thousand and one injurious results that would follow the examination system and the facilities for monopolistic aggression it would provide. The fact that it would be entirely worthless is sufficient. It is nonsensical to protest that prevention is better than cure when the plan proposed would have no preventive effect or influence whatever. The Plumber and Steamfitter argues that, according to The Globe's point of view, men "should be allowed to run dangerous steam boilers, to operate elevators, to handle the throttle on railway trains, or do pilot or engineer duty on steamboats, providing, of course, there is a staff of inspectors to watch them.' This argument is on its face so absurd that if it had not appeared in a journal of standing no answer would be necessary. With steamboat pilots and railway locomotive engineers inspection of work would be useless, the only possible safeguard being examinations as to competence. With the contracting plumber examination as to competence would be useless, the only possible safeguard being the inspection of work. To examine contracting plumbers would be as absurd as to require the Presidents of railway and steamship companies to pass examinations and prove their competence as locomotive engineers and pilots. It is noteworthy that The Plumber and Steamfitter does not seek the examination of the men who do the work. If an examination law were drafted our contemporary would be careful to see that a loophole was provided to allow the employment of apprentices, improvers, and botches. This merely shows that our contemporary serves the employing and contracting, not the industrial interests. The Globe serves the public interest and opposes any restriction that merely puts the public at a disadvantage. We commend the cities that have ordered the installation of modern plumbing. They would be in serious difficulties if tendering on the work were restricted to a few men accidentally able to pass mechanical examinations."

The Globe, it will be noted, does not republish any quotation from the Plumber and Steamfitter to substantiate its statement that this paper "demanded only the examination of contracting plumbers." The Plumber and Steamfitter has never taken this position, having instanced Calgary as an example for Toronto to follow—and in Calgary both master plumbers and journeymen must pass examinations

Probably no class of men are better fitted to speak regarding the value of examinations than plumbing inspectors and The Plumber and Steamfitter has yet to hear from one inspector who is opposed to the establishment of examinations. Let the Globe ask any of the half dozen plumbing inspectors in Toronto if a better class of work would not be the result of examining both journeymen and master plumbers. Ask the inspectors if there are not many men working at the trade who merely copy what others do, who make no effort to understand the how and why of things, and whose work is unsatisfactory to the houseowner, an annoyance to the inspector and, in many cases, dangerous to the health of the community.

The Globe tries to make a distinction between the engineer who operates a boiler and the plumber who in-

stals a sanitary system in a house. The former, it contends, should be subjected to an examination while the latter should be left to do his work subject only to the watchful eye of an inspector. Yet the lives of the public depend as much upon the work of one as of another. The engineer may neglect to keep his boiler in proper working order with the result that he, and possibly others, may suffer death or injury from the neglect. The plumber may neglect to properly vent the fixtures he instals with the result that disease may insidiously weaken and cause the death of innocent children. If competent workmanship is necessary in the one case it is in the other. And if examinations will increase efficiency they should be established.

The most progressive United States cities require inspectors, masters and journeymen to pass examinations, and Calgary and New Westminster have set the same example for Canadian cities to follow. Montreal also has a partial system for masters and journeymen, while Halifax confines its examinations to journeymen. Galt, Fort William, Halifax and New Westminster also require master plumbers to furnish a bond of from $200 to $500 to ensure the faithful performance of work.

The charge made by the Globe that the Plumber and Steamfitter would seek a loophole in an examination by-law allowing the employment of apprentices and botches is founded upon pure malice, as this paper has always contended that the best policy for master plumbers to adopt is that of doing only high grade work. The Globe, in common with a large percentage of the population, looks upon master plumbers with suspicion and this dissrepute can only be overcome by master plumbers doing honest work and demanding a fair price therefor. The plumber who hopes to build a successful business will not accept contracts which require the use of inferior materials or poor workmanship in order to produce a margin of profit. He values the reputation he is establishing too much.

That the policy of The Plumber and Steamfitter in endeavoring to uplift the plumbing trade in Canada is approved by both masters and journeymen in all parts of the Dominion is proved by the remarkable success experienced in securing subscribers. Traveling salesmen state that they find few plumbing shops in Canada where The Plumber and Steamfitter is not found on the desk or work bench and, in addition to this, the most intelligent journeymen, those who are to be the successful masters of a year or two hence, are also interested readers as is indicated by the following letter recently received:

Editor Plumber and Steamfitter,—I herewith forward my yearly subscription for The Plumber and Steamfitter of Canada, which I think is a valuable paper to anyone engaged in the plumbing trade. I learned my trade in London, Eng., and you give some good points as regards plumbers having to have a license which I think is a good protection to the general public as regards their health.

I am now working as journeyman plumber in Walkerville and Windsor, which cities should have examinations for all plumbers as at present we have natural gas here and every Tom, Dick or Harry who can use a Stillson wrench and cut a thread call themselves fitters or plumbers, which I think is degrading the name. The people are complaining of leaky joints and bad workmanship, but what can they expect when they employ such fellows.

It makes me sick to see them going around with pipe on their shoulder. I served six years' apprenticeship in London, Eng., and have worked on the water works supply in South Africa for the British Government. I know two persons here doing work on gas fixtures, one is a farmer and another a bicycle man.

Glad to say I am busy myself, I have the contract for the plumbing on the Presbyterian manse and two large residences in Blenheim, in fact, I have the monopoly of the trade in that small town.

I hold a Detroit Journeyman's Plumber License also.

FRANK ROGERS.

THE PLUMBING INSPECTOR AND HIS WORK.

Chatham is the latest Ontario city to decide to engage a plumbing inspector. Regulations have been drafted and the appointment of an inspector will be made shortly. It is to be hoped that the appointee will be an experienced plumber who will not be merely a policeman to see that work be done as the by-law directs, but that he will also keep himself thoroughly informed as to the advancement made in the trade and co-operate with the progressive plumbers who are endeavoring to raise the trade to the standard of a profession.

A good inspection service is invaluable in the health department of any city, the inspector occupying a two-fold capacity in being the protector of the public's interests and the instructor of the workman who wants to do work properly, but does not know how. The choice of an inspector is, therefore, important and none should be selected unless he has worked at the trade and passed an examination proving his competency.

These qualifications call for the payment of a respectable salary, but it cannot be said that the remuneration given to Canadian inspectors is ample for the work performed by them. Winnipeg heads the list with $1,600 for its chief inspector, and several other western cities pay wages sufficient to attract first-class men, Calgary, however, being considerably below the smaller cities of New Westminster, Edmonton and Port Arthur. Toronto's maximum for its five plumbing inspectors is only $1,080, while Ottawa pays $1,000; Montreal's figures of $900 and $700 each for two assistants being far too low, the three inspectors having to oversee the work of 270 firms, an average of 90 each, the average in Toronto being 64 and in Ottawa 47. Other cities in Eastern Canada pay from $850 in Halifax down to $500 in Peterboro, the wages in many cases being less than an ordinary journeyman receives.

The municipality employing an inspector (and paying him a fair salary) has a right to expect that he shall keep abreast of the times by reading trade papers and books as well as by affiliating with the American Society of Plumbing Inspectors and Sanitary Engineers, which brings him into contact with the brightest inspectors on the continent. It will, in fact, pay any city to send a representative to the annual conventions of this society, the convention this year being announced for Jan. 20, 21 and 22, at Trenton, N.J. The Society already numbers several Canadian inspectors on its membership roll, the president being Charles B. Ball, chief sanitary inspector of Chicago.

CALGARY PLUMBERS TO HOLD BANQUET.

The Calgary Master Plumbers' Association has announced a banquet to be held at the Grand Union hotel on Friday, Jan. 14. "Come visit with us at Calgary, the city of splendid promise," is the kind way they have of putting it.

The Plumber and Steamfitter acknowledges receipt of the invitation and distance will be the only reason to prevent our attendance.

THE EVOLUTION and SIMPLIFICATION of PLUMBING

by Herbert Francis Shade
VICTORIA, B.C.

[Written for publication in the Plumber and Steamfitter of Canada and Registered in accordance with the Canadian Copyright Act. First Article.]

The question of sanitation is one which is now attracting the serious attention of the general public, medical men and others of scientific pursuits being foremost in their advocacy of its prime importance and relation to public health. To-day, the heretofore uninterested public are beginning to enquire for themselves into matters to which they formerly closed their eyes, and the dire necessity of no longer allowing grave sanitary defects to exist in our houses and their surroundings is now generally acknowledged, and this has led to a demand that plumbers shall possess a sound knowledge, both theoretical and practical, of their important calling.

It is the writer's intention in the preparation of the papers that follow to try and convey in as simple a manner as possible the underlying principles in the practice of modern sanitary plumbing, and more particularly to illustrate the advancement of modern methods, as against those of the near past; and here it might be safe to state that no branch of construction work for the same space of time has given such changes for the betterment of our sanitary conditions as sanitary plumbing. It might be argued, however, that historical data on the evolution to the present standard have no particular feature to recommend them from an educational point of view, but in the writer's opinion, by illustrating the errors of the past a true value and reason will be impressed for our present methods.

Small works are factors of large ones and large works the multiplication of small ones; the same principle is involved in the removal of sewage by water carriage from a small residence as from the modern skyscraper with its thousand or more outlets.

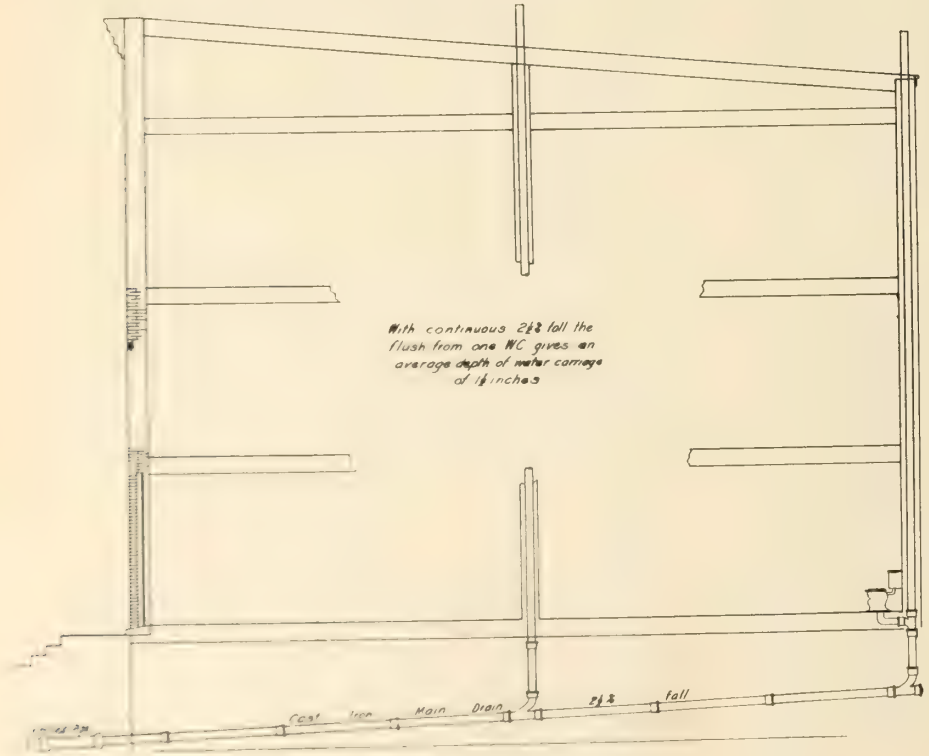
With continuous 2¼ fall the flush from one WC gives an average depth of water carriage of 1½ inches
Cast Iron Main Drain
2¼ fall

Fig. 1.—One Flush Carries Sewage to Sewer.

The main essentials of a modern system of plumbing are evidently as follows :—

Class of Fixture—(a) That the receptacle in which the water is soiled shall be constructed of an impervious material, and (b) so formed that it shall be readily cleansed by a minimum amount of water, and (c) its location should always be in a well lighted and ventilated room.

Soil and Waste Pipes—(a) That the pipe which conveys the waste material away from the fixture shall be cylindrical in form, sound and tight, and (b) of such diameter that it should be self-cleansing in performing the duty for which it is designed.

Traps—That there shall be placed as close to the fixtures as practicable and connected to the waste or soil pipe, a barrier in the form of a water trap, to prevent the air contained on the outlet end of the trap coming in contact with the air in the room.

Vents—That this fixture trap should be supplied with an air pipe attached to the uppermost portion of the outlet end of the trap and carried direct to the outer air without any changes in direction of more than 45 degrees from vertical for a double purpose: (a) to prevent the loss of the water seal of the trap by syphonic action; and (b) to establish a current of fresh air through all the parts of the drainage system.

The Drainage System.

Main Drain—That all branches of the drainage system shall converge into one main pipe, perfectly sound and gas-tight, and, as nearly as practicable, installed to a constant and continuous grade to the outlet. As to whether a trap and air inlet shall be placed on the main drain is a very debatable question, and is still open to argument and will be treated fully in a special paper.

The quality of material shall be such as to neither be liable to corrosion nor be affected by the changes of temperature to which it may be subjected.

This main house drain which conveys the sewage from the house or building to the main sewer or septic tank,

whether it be of cast iron, galvanized iron or vitrified pipe, should be constructed in such a manner as to facilitate the quick removal from the premises in the shortest possible time, all waste materials which are ordinarily discharged through plumbing fixtures. It is therefore imperative for the best results, that its grade or slope be constant and that its alignment be as nearly perfect as possible, the fewer changes of direction the better, but, where necessary, they should be of a radius of not less than four diameters of the pipe.

These essential all tend to give a constant velocity of flow so that the sewage is carried with one flush to the main sewer. For example, we will take an ordinary low-down closet (see Fig. 1) discharging into a 4 inch horizontal line with a 2½ per cent. fall (3 inches in 10 feet) the depth of flow in the pipe given by this averages about 1½ inches, so that if the grade be steady and the facility of the flow is not lessened by too frequent changes in direction, this water carriage is sufficient to carry human excreta to the main sewer with one flush. If, on the contrary, the slope of the drain be variable and the changes of direction frequent, (see Fig. 2) the water carriage is so elongated that the excreta drags on the invert of the pipe and the flush water on its outward passage, passes beyond, and leaves the soil to be removed by the next flush. It is conclusive by this that a constant average grade is what is required for proper disposal of all household wastes by water carriage, and while the old rule of plumbers: "give her all the fall you can," may not be considered erroneous, it is better practice to establish a uniform grade of 2½ per cent. to the sewer junction. In many cases, however, this grade cannot be given for many reasons. The minimum grade should never be less than 1 per cent., and in such cases the greatest care should be taken that the grade and alignment are as nearly perfect as possible, and extra allowance should be provided for intermittent flushing. In cases where the slope is slight or variable the velocity of flow decreases proportionally with the fall, but the depth of water carriage increases in proportion to the decrease of the fall. In best practice, the cast iron main drain is hung horizontally from the cellar joists or securely fastened to the walls, in as direct a line to the main sewer or septic tank as possible, all changes in direction being made with fittings of a large radius. It is the custom in some cities to carry the cast iron to the sewer junction in the street, so that by this system the whole private drain is of cast iron. In ordinary cases and what is generally the practice, the iron pipe is carried two feet outside the foundation wall, and from this point to the sewer salt-glazed earthenware pipe is used. The importance of carrying out this portion of the drainage system with as much skill as the plumbing part is to a great extent lost sight of, (see Fig. 3) and in some cities where very rigid regulations governing plumbing construction prevail, this portion is left practically to unskilled labor.

Construction of Drains.

The method of construction of vitrified drains is simple, The favorite method is to dig the trench and level each length with a spirit level, this is a doubtful method as the variation in the size and shape of the hub, the cylinder of the pipe, and thickness of cement in the joints is such that a proper uniform grade cannot be obtained in this way. The method adopted by engineers (see Fig. 4) is the proper and only safe one. This consists of striking a uniform grade from the main outlet to the main sewer. If it is not convenient to secure an engineer's level to do this, an ordinary corrected carpenter's level will suffice for ordinary purposes where a slope of not less than 2 per cent. can be given throughout.

First erect Station "A" at a convenient height over the main sewer, then measure off 50 feet in the direction of the drain and erect Station "B." (See Fig. 5). Set up the level on Station "A" and sight at "B" and when the bubble is in the centre, mark the point so found on "B"; from this point on "B" raise one foot, thus giving one foot fall in fifty feet. Now set up all the additional stations necessary and line them up with the grade between "A" and "B." Should the line be a long one it is advisable to test the slope every 200 feet. After placing the line over the station above the centre of the proposed cut, open up the street to the sewer and establish the depth of the invert of the sewer junction below the line and open up the ditch to this depth.

The ditch should be at least two feet wide with vertical sides, narrow ditching is false economy as it is difficult to obtain proper alignment.

When the whole of the cut has been taken out to the grade of the line and the bottom made as nearly straight as possible by means of a rod of convenient length, with toe-piece attached in the shape of an L, fit the first length into the Y of the public sewer with a fall proportional to the grade of the line; now rest the toe-piece of the rod on the invert of the first length and mark this distance on the rod, and, as each length is laid, raise or lewer it to suit this mark. It is a good practice to caulk with a proper tool one strand of yarn in each joint and more satisfactory to yarn a line up 25 to 50 joints before cementing. This prevents the cement from taking its initial set before being used, and, in this way losing its cohesive force. After having yarned and lined up the pipe line the annular space between the hub and spigot should be filled with cement mortar of a proportion of one part of best Portland cement to two parts of clean, sharp sand

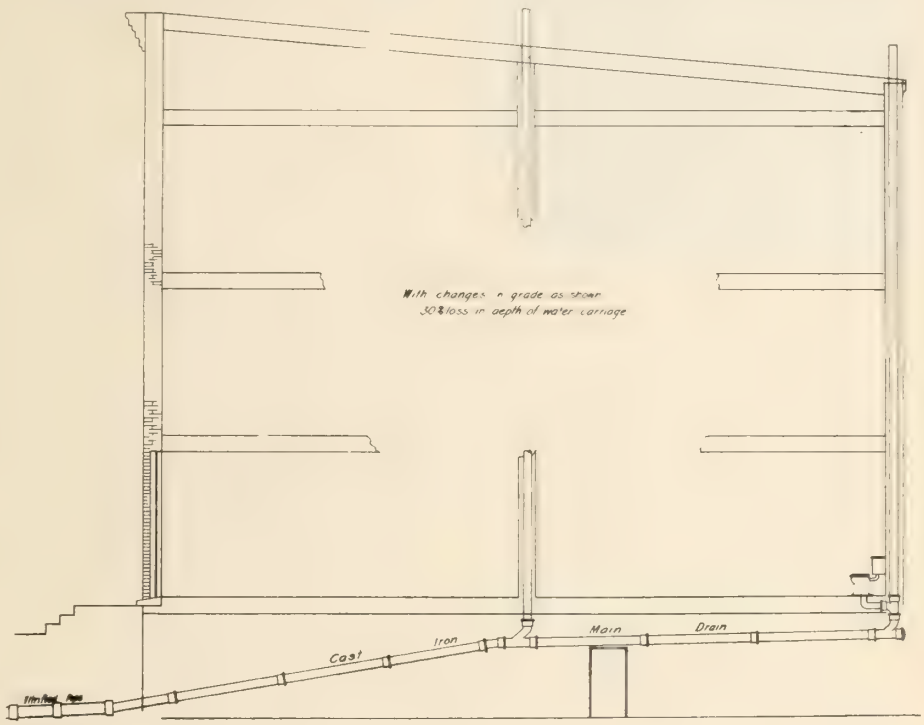

Fig. 2.—Flush Water Fails to Clear Soil Pipe.

well mixed. The best results are obtained if the cement is pressed into the joints with the hand, and the joints beveled and trowelled to a smooth finish. The strand of yarn, if put in properly, entirely prevents the passing of the cement mortar into the interior of the

Fig. 3.—Laid by Unskilled Labor.

pipe. Another method is to lay each joint to the line and cover the invert of each hub with ½ inch bed of mortar, pressing each length into the bed of mortar of the last joint. In this method a semi-circular rubber scraper (see Fig. 6) must be used to remove any mortar that may have passed into the pipe as each joint is made. After the pipes are all laid and lined up the upper half of the joint is made from the outside. When this method is used with care it is very satisfactory, but there is more or less danger of the cement passing into the pipe while the upper portion of the joint is being made. In back-filling, care must be taken that the joints are not disturbed or that stones are not deposited on the top of the pipe.

In soft or unstable ground the pipes should be laid on suitable planks at least 2 inches thick and placed on the ditch to the grade of the line. In this case the space between the joints of the pipes should be filled with concrete so that the pipes will have a solid bearing. In quicksand or made ground where the ground is very soft the planking should be laid on sheet piles (see Fig. 7) not more than ten feet apart. The ditch is first taken out to grade, the sheet piling is then driven into the bottom of the ditch and a line is stretched parallel to the grade line, with proper allowance for hubs and thickness of plank, and the piles are cut off square to this line, so that each pile gives proportional support.

In vitrified earthenware main drains where changes in direction up to 45 degrees are necessary, it is good practice to make long, gradual turns by using to advantage slightly bent pipes, and to leave near the centre of the turn a Y, with its branch pointing vertically for inspection purposes (see Fig. 8) and with its location properly marked by a stake or proper record. In case of a deep drain this Y can be extended conveniently near the surface and the opening carefully closed with a stopper, over which layers of clay and cement are put so that the stopper can be removed without any danger of breaking the hub. This style of clean-out or inspection has considerable advantage over the ordinary way of leaving the running end of the Y for this use, i.e., of less friction, owing to greater radius of the turn; being more get-at-able and providing for inspection without digging to the bottom of the drain, flexible rods being more easily operated in the event of a blockage. In long runs of vitrified sewers vertical Y inspections should be left every 75 feet, and their positions marked. The size of main drains is determined by the conditions met with, such as the number of fixtures discharging into the line and the maximum possible frequency with which the flushes occur. In no instance should their diameter be increased, unless, at the point of the enlargement the greatest discharge is above the carrying capacity of the pipe.

The Plumbing System.

The cast iron portion of the main drain, with its branches within the building, is called the "plumbing system." These branches for ordinary work are four inches in diameter, and known as "soil pipes," when receiving the discharge of water closets and other fixtures having an outlet greater than 3 inches in diameter. The branches of less than 4 inches in diameter are called "waste pipes," into which are discharged all the fixtures having a waste opening of 3 inches or less in diameter; these include sinks, baths, basins, wash-trays, urinals, etc. In extended systems it is necessary that these sizes be enlarged where large numbers of fixtures discharge into one line. The capacity of soil and waste pipes depends entirely upon their size and fall.

Upon the fact that there are two distinct types of public sewer systems, i.e., the "separate" and the "combined," depends much as to what use private house drains shall be put. Ordinarily, if the private system be connected with the "combined system," it shall take care of all waste from the plumbing fixtures, yard, cellar and area drains, rain-water conductors and subsoil drainage; this requires, in some cases, a larger main drain, as in the wet season in some cases it has to take care of an abnormal flow.

In the case of the private house sewer connected to the "separate main system," however, a very fine line is drawn and only the household wastes discharging through the plumbing fixtures are allowed to discharge into this. A separate water drain receives the yard, cellar and other drainage.

In the separate system, as well as the combined, where the public drain is not of sufficient depth to drain cellars, it is necessary to convey these waters into the main house drain, indirectly, through traps in the main sewer. Usually the vitrified sewer is carried sufficiently low and an ordinary floor trap with a side outlet above the water seal to receive the foundation drainage is placed in the basement. Where the interceptor trap is used on the main drain it is kept sufficiently low for this purpose, but not always does the depth of the main sewer permit this to be done without cutting down the grade of the main drain to an unreasonable extent; and while there are many different ways of placing this cut-off trap for cellar drainage, its demerits and attendant evils are the same in all cases.

Basement Drainage.

In illustrating an ordinary scheme of basement drainage where the house con-

Fig. 4.—Pipes Laid Properly.

nection is direct without an interception trap (see Fig. 9), and where the floor washings are discharged over the top of the trap, there are shown two distinct weaknesses, viz., (a) in the case of a blockage in the main drain at a point on the sewer side of the trap, when it

is obvious that the sewage will rise and discharge through the lowest opening, i.e., the opening that receives the tile foundation drainage, and through this

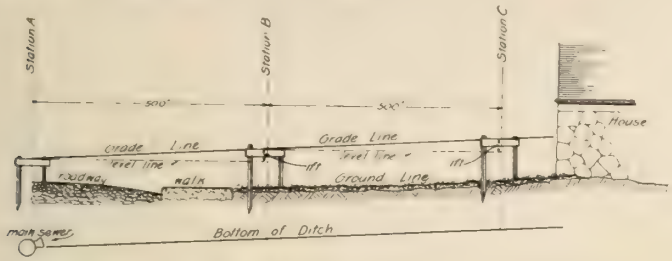

Fig. 5.—How Sewer Should be Constructed.

the whole soil adjacent to the foundation wall would be polluted with sewage, the open tile drain in this case acting as a

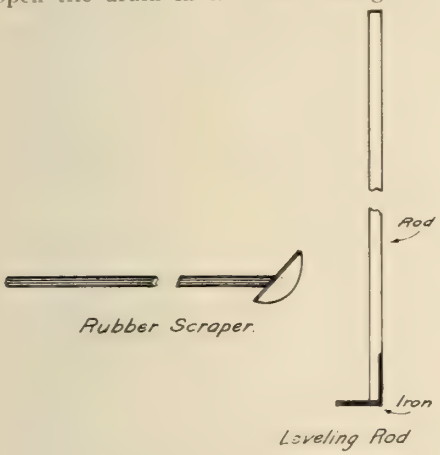

Fig. 6.—Cleaning Mortar from Sewer Pipe.

sewage distributor, and it is usually considerable time before the true condition is found out. Personally, the writer knows of instances where this condition must have existed for a considerable period, and in order to bring about a sanitary condition of the premises all the soil adjacent to the foundation walls had to be removed. The second defect is (b) when, in the summer season, the

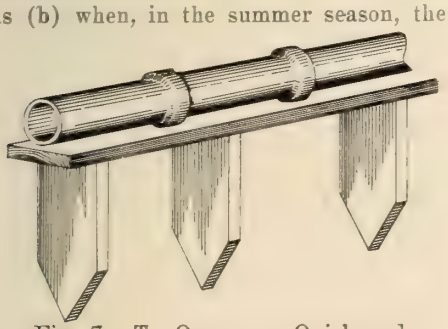

Fig. 7.—To Overcome Quicksand.

seal of this cut-off trap may be lost by evaporation owing to non-use. Under these conditions the sewer air passes into the basement and through the tile drainage, and should the rain water conductors be discharged over this cellar trap the seriousness of this condition is still further aggravated by the sewer air being drawn through these pipes.

There is but one proper and safe way by which rain water and cellar drainage can be discharged into house sewers, and that is by connecting it indirectly through a double seated cast iron trap (see Fig. 10), with a seamless spherical copper float located between the upper and lower seats, and by its use all the dangers and evils of the ordinary way are obviated. With any rise of water through the trap, caused by back-water

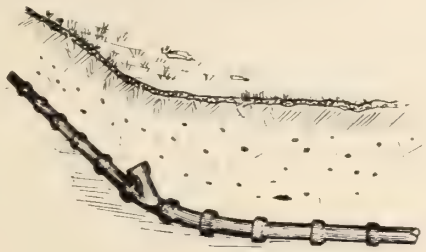

Fig. 8.—Making Bends.

sewer blockage or any other reason, the float rises with the water to the upper seat and prevents discharge into the tile drainage, and, in the other case, that of the loss of the trap seal by evaporation, the float settles to the lower seat as the water recedes to the bottom of the aperture. It will be noticed by the sketch that the opening in the trap to receive the tile drain is above the upper seat, thus avoiding any possibility of the soil adjacent to the tile drain becoming charged with sewage, and remov-

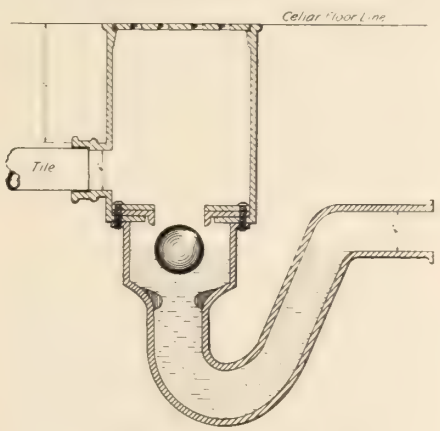

Fig. 10.—Safe Trap to Use.

ing the danger in the summer season (due to the loss of seal by evaporation) of escape of sewer air through the trap to the cellar, tile drain and rain water conductors.

There is not the slightest doubt that the best way for the removal of these waters, where the public surface drain exists, is by making an entirely separate connection, or in residence work, where the fall of the ground permits, to convey this water to a rock sump under the ground at some distance from the house.

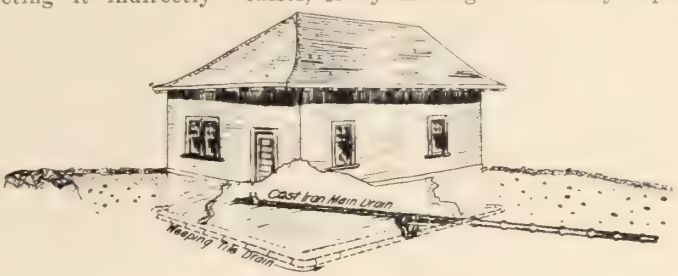

Fig. 9.—Draining the Basement.

DISTRICT HEATING SYSTEMS.

The Dominion Steam Heating Co. wants a franchise to Toronto's streets. The company proposes to supply heat to customers, and the intention is to begin business in the Rosedale district. An application has been made to the Board of Control for a by-law granting the company the right to lay pipes in the streets for the purpose of conveying steam and hot water and power. The company's proposition is to pay the city two cents per foot per annum on all its underground distributing mains.

A somewhat similar proposition is before St. Thomas, except that there the proposition is a municipal one. About four years ago, City Engineer Bell suggested to the council that the exhaust steam from the heat, light and power department could be used to advantage to heat the city hall. The heating of the municipal building cost $800 per year and being heated by hot water a controller was put in and the steam reduced to hot water. This proved so satisfactory that the Carnegie Library Building, the heating of which cost $600 per year, was also included in the service, with the result that in less than a year the plant had paid for itself. Contracts were then entered into to heat the Locomotive Engineers' building, the Columbia hotel and a block of stores and buildings within a radius of two blocks. And now City Engineer Bell is preparing an estimate for extending mains throughout the city so that all who may desire to have their premises heated by the municipal plant can do so. It is the intention to provide steam, and where buildings or residences are equipped for hot water heating, controllers will have to be put in to reduce the steam to hot water.

Why So Many Plumbers Fail in Business

A Correspondent in the Metal Worker Discusses the Sin of Undercharging and Suggests Some Questions, Which Should be Considered by the Journeyman Who is Thinking of Going into Business for Himself—Lessons Learned Through Mistakes Made—Concluded from Last Issue.

Let us see, if possible, upon what basis we pay for the goods used in our business. Manufacturers and jobbers of plumbers' and tinners' supplies place a price on the goods they sell which covers :

1. A percentage on the money invested in the business (which percentage should never be less than can be obtained for good real estate mortgage loans).

2. An added percentage to cover the expense of continuing the business, such as salaries, rent, light, heat, etc.

3. An added percentage to cover the book losses, due to the failure of some of their customers, the plumbers and tinners.

4. An added percentage aside from the above as a profit, without the reasonable expectation of which it would be foolish for them to engage in business risks at all. This percentage of profit not being realized, it would be better for them to invest their money in good interest bearing bonds or mortgages and work for a stated salary for others.

Do plumbers as a rule make their charges in accordance with a stated plan of remuneration? Too many of them are working for wages with their savings invested, without interest, for the benefit of customers who are, or are not, grateful. To a combination of cheap work and a hasty temper is attributable the failure of Henry R. to make good.

History of a Close Figurer.

Twenty-five years ago Henry was a well paid mechanic, with an ability that compelled the boss to put him on the better class of work. Twenty years ago he was working for himself and employing three other men at good paying work. Work gradually increased ; he employed six men and worked hard himself. Twelve years ago he came into some money and invested in a showroom and a fine workshop, with a mortgage on it. Eight years ago he was cutting a wide swath, employing from 15 to 25 men. He was still working hard himself and had a clerk and bookkeeper in the store. From that time until five years ago it was a common thing for two tradesmen to meet on the street and engage in a conversation about as follows : "Hello, John ; who gets the Carnavan apartment house job?" "Why, haven't you heard, Sam? Henry's figures were away below the rest of the bunch. He's doing lots of work lately." "Yes, he is, John, but don't you see that it is all contract work, gotten by being the lowest among six or eight bidders?" "There is such a thing as figuring too low, you know. Henry has to work things pretty close in order to make a few dollars—so close that he very often 'falls out' with the owner during the progress of the job. The consequence is that when the owner wants some jobbing done, without competition, he thinks of Henry, as 'that cheese-paring idiot,' or some other pet name, and sends for you or me to do the work." "That's so, Sam, I do quite a bit of repairs and alterations on Henry's old jobs and wondered why they didn't send for him."

So it proved. Henry was now working with might and main to keep his men and his money busy. One can be firm without being violent. With a temper so short that an argument with a customer usually developed into an altercation, he made few business friends. Therefore, in order to keep his men and his plant busy he must get contracts, while other firms in town were doing the paying work.

During the ensuing five years things slowly dropped back with Henry until, without becoming bankrupt, he parted with the nice building, employed fewer men, and is now located in the suburbs, with himself and three men doing all the work he can get. That is the net result and residue of 25 years of hard work and a considerable investment of money. Henry is not, and never was, a drinking man ; has not been known to gamble, and did not live extravagantly. Just too much work for too little pay and an inability to make friends of customers.

Meet Obligations Promptly.

One thing to be kept in mind in making out a schedule of retail charges is that your bills for material are usually net 30 days, which means that they are due to be paid in 30 days from date of shipment, with, perhaps, six, or eight days on the way. Usually the manufacturer and jobber gives the privilege of deducting 2 per cent. from the face of the bill if paid in 10 days from the date of shipment, which sometimes means paying before the goods are received. Stock is therefore a drain on capital when paid for, and unused stock continues to be a drain at the rate of 6 per cent. per annum. That is, $100 worth of stock kept a year has virtually cost $106, although its value may be less than when bought.

The bills for the labor you employ are due in six days at the outside, as the weekly payment of labor is almost universal. These prompt payment rules, formulated by the supply houses and by labor, are established, and are pretty generally adhered to. On the other hand, there are no generally accepted ideas as to when you, who have advanced your money for the benefit of your customer, shall be repaid. Ten days, thirty days, ninety days, six months, a year and even two years seem the reasonable time for payment. These running accounts cost you money at the rate of 6 per cent. per annum. Can you induce your customer to pay interest on his account? If you cannot, then do your utmost to get the equivalent by increasing your charges proportionately to such customers. If a customer asks the cost of a certain proposed piece of work, incidentally mentioning that he cannot pay until the end of six months, obviously the proper thing to do is to add an item for interest. It is not necessary, and often would be unwise, to mention that fact, however.

An Insufficient Profit.

The retail merchant who sells goods over the counter gets for those goods a price which will remunerate him for the time spent in selling them, in addition to the other expenses provided for in the selling price of the goods. If he can sell goods to a customer and be ready to attend to another customer in 10 or 15 min., he is able to realize a fair average profit for his goods. On the other hand, if it should take him a whole day to attend to a single customer, the result would be the same as though but one customer had called during the day. If such a condition should continue indefinitely, he must so arrange his prices that the profit from the single sale per day will pay his business and living expenses for that day, with a percentage added for net profit.

Going back to the plumber, let us take as an illustration the tearing out of an old copper lined tub and replacing with a good porcelain lined iron

bathtub, with the changing of waste and supply pipes entailed thereby ; a job of, perhaps, eight hours, and at a figure of about $45. It is not a sufficient answer to the preceding paragraph to say that the time taken to place the tub is figured at 20 or 25 per cent. over its cost. The same may be said of the time consumed in the making of the goods which the merchant has sold over the counter at an outlay of time of, perhaps, 30 min. The fact remains that the counter merchant has sold a bill of goods in 30 minutes, while the plumber merchant has sold a bill of goods (in this instance a bathtub and the necessary accessories) in eight hours. If both keep up the same ratio during the week the counter merchant has sold $4,860 worth of goods, while the plumber merchant has sold $270 worth. Of course the ratio will not hold true for a stated length of time, because the counter merchant will make many small sales, and in less time. So will the plumber merchant. The purpose of the illustration is to emphasize the point that while the grocer may be well able to sell goods at an advance of 10 or 12 per cent. over cost, such an advance in the case of the plumber would net a loss.

Have Courage to Get Proper Prices.

What becomes then, of the too often expressed opinion that the plumber's charges are exorbitant ? The plumber himself knows that the opinion is unfounded, because he is in a position to know the net profits (or losses) during the year. Will he have the courage of his convictions and base his charges on his knowledge, or will he weakly submit to the judgment of fractious customers ? If the latter, we already see his finish. If the former, he must be pleasant as well as firm.

Let the plumber have a decent respect for himself and for the honorable business in which he is engaged and others will respect him. If there is an association of the tradesmen in his line in the vicinity, let him join it and keep in touch with the top-notchers. Having taken and read the best of the papers devoted to his business while working as a journeyman, there is no need of advising him along that line, except to say that it is to his interest to encourage the same sort of study among hi- help.

AN EFFICIENT INSTALLATION.

In these days when there is a great deal heard about the expensiveness of plumbing installations, it is with gratification that the trade grasps cost-cutting plans, writes Wm. Weatherby in the Plumbers' Trade Journal. Figures 1 and 2 show two connections for lavatory traps. The latter gives the same service and acts just as well as Fig. 1, and has proved to be just as sanitary. When stoppage takes place in Fig. 1, and when an attempt is made to force it out, waste matter will be driven up into vent. When waste line is cleared, waste matter will remain at point d, sufficient in time to stop circulation. This would be less liable in vent, Fig. 2. The "S" trap necessarily, as shown, takes connection at floor and is in the way of

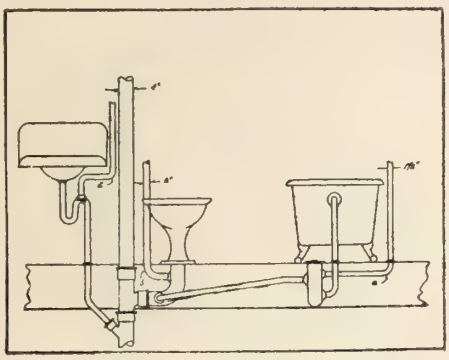

Fig. 1.—Connections Giving Same Service as No. 2, at Less Cost.

cleaning and the placing any covering on bathroom floor.

Note the difference in venting the water closet in Figs. 1 and 2. Every time stoppage occurs in Fig. 1 and is moved by a pump, the two-inch vent is filled and will remain full of solid matter after soil line has been opened, at point b. The same condition is found in vent from bath tub trap. In both

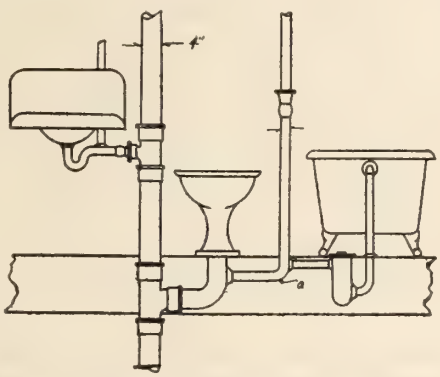

Fig. 2.—Vent for W.C. Used as Waste for Bath Tub Trap.

cases accumulation by condensation and etc., will soon partially stop vent.

Fig. 2 shows a vent for the water closet used as a waste from bath tub trap. By making the connection in this way, the waste from the tub removes any stoppage and always keeps vent open and clean at point a. I have tried this arrangement and it has proved safe by actual use, protecting against syphonage and back pressure.

As will be observed from sketches, waste from fixtures enters four-inch soil stack above, making it necessary to vent water closet and lavatory. The roughing-in and completing of work as shown in Fig. 2 can be done at 25 per cent. less in cost of time and material and be just as sanitary as according to Fig. 1.

ABOUT PLUMBERS' BILLS.

By J. F. Brady.

Were you ever confronted with the statement that your bill for a small job of repair work was extremely high or extortionate in price ?

Yes, I know you have, and on many occasions. It is doubtful if you thoroughly convinced your ill-humored customer of the reason for the "supposed" high price of the bill—one seldom can.

The price on some occasions for putting on a new faucet is sometimes four or five times the price of the same, while for going to a place to repair a flush tank, to clear a sink waste, to put in a new trap, or to remove an obstruction in a sewer, which may not take much longer does not make the price of the bill much higher.

When customers contest the amount of the account rendered, they do not stop to consider that the time of the journeyman going to and from the job must always be considered in compiling the charge, which is in a great many cases the greatest item, and it goes against their grain to pay for a man's time walking the streets. It does seem hard that the public must be, as it were "soaked" in this manner, but the charge is legitimate and necessary in the case of conscientious plumbers.

It must be admitted, however, that there are in the business, men who delight in overcharging their customers at every opportunity. They charge for the time from the shop to the job and back to the shop again, although it may happen that they go from that job to another one which may take but 15 or 20 minutes to reach, where the shop is about an hour away, which of course would run the bill a trifle higher. On a number of jobs, figuring like this would net quite a little additional sum.

In contract work the general practice is to figure the costs and add a certain percentage for the profit ; but a method which is coming into use in a great many shops throughout the country now when a figure is given, is to contract to do the work at actual cost, and that a certain agreed upon percentage is to be allowed on that cost price in addition, for the profit of the plumber. This method could be better applied for larger work than the smaller jobs, because the percentage on the cost of the smaller work would be so little that it would hardly pay for the trouble.

How to Develop Ability in Heating Work

Thoughtless Work on the Part of the Journeyman runs Away With the Profits of the Steamfitter—Jobs Should be Figured out Before Leaving the Shop—Headwork counts More Than Muscular Strength—Suggestions Regarding the Erection of a Small Heating Job.

Written for The Plumber and Steamfitter by Charles H. Denison.

One of the reasons why so many heating jobs consume more time than the boss figured upon is the lack of headwork upon the part of the fitter who is doing the work. Now, in some shops the plans of the heating job are passed up to the fitter and he is expected to do the rest. A really first-class way-wise journeyman can do this, but I must confess that there could be more in the game and with great profit to the craft and delight to the bosses. This may be accepted for a great truth by the fitter: muscle simply is not in it for a moment with judgment. The fitter who tries to better his lot in life by mere strength will always be in a very ordinary position and draw the meanest and hardest jobs on the book, from a physical point of view. Now the place to begin the proper erection of the small house-heating job is right in the shop.

Make List of Supplies.

Consider the plans. Observe the scale of the blue prints, jot down the measurements and fittings and make out a complete list of the material needed. The helper can be selecting the stuff, while the fitter is getting out the order. Preserve this list and hand it to the office manager, so he can charge it against the job upon the books.

On a small job of from six or eight to twenty radiators, it ought not to bother a good fitter (if he has the plans) to make out a complete list of all the pipe, valves, fittings, etc., that will be needed upon the job. The main point is to get all the material upon the work so that there will be no extra trips necessary in order to keep things moving.

Once at the place where the heating plant is to be installed the material should be placed to the best advantage.

The radiators can be set to their place as each is carried from the cart. I refer now to puttting a job in a furnished house.

The boiler, fittings, pipe, tool chest and bench can be placed in the basement as in the northern climate the cellar is generally large enough for this purpose. Now, for an hour or so the fitter can "look the job over" and compare with the plans and get the run of things in general in his head.

Have System to Follow.

This pays and is a very much better plan than going at matters in a happy-go-lucky hit-or-miss fashion.

While the fitter is so engaged, the helper can be setting up the bench, laying out the tools and getting the temporary shop in the cellar in the best possible shape to do business. If convenient, and agreeable to the people who are living in the house, the holes for all the steam or hot water pipes may next be bored.

It is a good time to do this task at this period for the overalls are then supposed to be clean, and, besides, the litter can then be swept up and it will not be necessary to go up-stairs into the house again until the riser connections are to be made. Housekeepers certainly do appreciate a neat and careful workman. Try it and observe for yourself.

From this point on all the rest of the work can be done in the cellar, except bronzing the radiators and testing the job.

Now, with the radiators in place and the holes all cut, I would next proceed to erect the boiler.

If a foundation had to be made I would prefer to make it myself, rather than to chase around after a mason and lose time, that is, provided no mason had been previously engaged.

Particular pains should be taken to see that the boiler sits level, and is square with the cellar, for if the boiler fails in these two respects it queers the looks of the entire layout in the cellar no matter how well the rest of the work may be done.

When the boiler is set up, the holes bored or cut in the floors and the radiators in place, the job is in a pretty fair state of advancement and the boss begins to grin because he can already see the "long green" "coming across."

All that remains to be done is to connect the boiler to the radiators and fire up.

Little Things that Count.

That way of looking at things has caused many a good fitter to lose out. Over confidence, you see, for there is "many a slip", etc., and the main and branches may not go in as easily as was anticipated. The pipe hangers should be placed before the main is cut out, If no pipe hangers are available use a nail and baled hay wire, and do not delay the game by constructing temporary hangers of wood, which are a blamed nuisance, and also very unreliable. One cannot raise and lower them, nor will a pipe roll steadily in one place while catching the thread, as it will in the regular hanger, or the temporarily-used baled hay wire. After the hangers are placed, measure up the entire main and cut it out before "slinging in a single piece." Then pick up the chain tongs or wrenches and the main will be in place almost before one can realize that the deed is done. The tees, by exercising a little judgment, and the correct use of the eye, can all be set so that when the branches are to be run very little "throwing" will be necessary upon the main. Now the branches may be measured out, cut and made to their place and the end is in sight. You are ready for the risers, which may be also entirely measured in one bunch, and when cut may be installed one by one. Each radiator valve should be examined and repacked at the bench, and in the case of first floor radiators, the valve can be made onto the stub at the bench very much more securely and quickly than trying to do it upon the floor. The tail-piece can then be made into the radiator, and the connection made and so proceed until all the radiators upon the job are connected. The air valves may be carried along and slipped on before each radiator is left. When all this has been accomplished, and the water supply pipe connected to the boiler, one is ready to test out, the smoke pipe having been placed on two or three days before.

Finishing the Job.

Now, the fitter may regard the job with a feeling of satisfaction, and all the more so if (horrors) no leaks show up. When the test is completed and everything works in the proper manner, the radiators may be bronzed, to the particular fancy of the owner. There yet remains one thing more to do, and this is about the dirtiest job of all—covering the boiler with asbestos and putting the pipe covering upon the pipes. If the fitter has obtained a stand-in with the cook, she will gladly make the flour paste for him. If not, he can do it for himself, and with the covering on the pipes and the boiler suitably dressed down in its asbestos coat he is ready to give orders to haul down the bench and wipe up the tools. Make a good job of the cleaning up and do not leave the owner sore because of the litter left around directly in his way. Try to act in such a manner that if you should ever

again be called to that house to do a job of work everybody will be glad to see you, and rest assured that this will give not only yourself, but also the shop, a reputation for good work and an accommodating spirit. It is a pleasure to have some fitters about and anything but convenient to have others. Such a manner of proceeding will win friends for everybody. It would make anybody feel good. Try it out once just for the sake of curiosity and see how the profits line up.

KNOW HOW TO DRAW.

Written for Plumber and Steamfitter by J. F. Brady.

The great strides with which plumbing has advanced in recent years has also brought out in the master plumber his ability to, or not to, draw the lay-outs of some plumbing jobs. In some cities it is now the requirements that where work of remodeling plumbing to a certain extent is to be undertaken, it is necessary that a plan for the same shall be filed before a permit will be issued to do the same. In a great many of these cases, even though the job be a small one, the plumber is put to the expense and trouble of securing the services of an architect or draftsman to draw the plan, which costs him anywhere from $1.50 to $4 or $5 for the same. Of course, if the master plumber is capable of drawing the lay-out, this expense is saved, as well as the time which must be lost in waiting for the execution of the plan before he can commence the work.

Even though there is not a requirement that such plans must be filed, don't you think that it is a pretty good plan to be able to lay out the plumbing on paper yourself? And isn't it a necessity as an advantage to your business to be able to do it? Shouldn't you be able to answer your men when they say, "How shall I lay out this work?" by sketching it out on paper, which forms the best explanation possible towards giving approximate ideas. Work cannot always, however, be installed as shown on paper, because of conditions which are met with which cannot be, in many cases, anticipated when laying out the work; yet it is the nearest we can come to the suggestion of how it shall be constructed.

In order to keep abreast of the times, it behooves every master plumber to learn the art of sketching accurately to scale, the lines showing the run of sewer, vent, and waste lines for their small work, for a reference, not only while the work is progressing, but for future evidence as to the location of the different lines after they are covered up. This they should learn even if there be no requirement for furnishing these sketches with the application for premission to install the work.

It is interesting to note that since the Washington, D.C., plumbing office called on the master plumbers to present such plans with the application for permit, many of our men have taken up the subject themselves and have become quite proficient in the work; their results comparing very favorably indeed with many of the architects' sketches furnished in cases for other plumbers.

Gossip of the Plumbing and Heating Trade

Items Gathered in all Parts of Canada—Letters Invited From Subscribers, Giving Particulars Regarding Changes in Firm Names, Contracts Secured, Novel Methods of Advertising or Other News—Photos of Anyone or Anything Connected With the Trade Also Welcomed.

L. J. Allard, plumber, Montreal, has assigned.

The sewerage works at Vernon, B.C., have been completed.

H. Auclair & Co., plumbers, Montreal, have been registered.

Berlin's waterworks department shows a profit of $13,000 for 1909.

Brantford netted a surplus of $10,541 from its waterworks last year.

Gravenhurst's waterworks system is now completed and successfully tested.

Listowel and Campbellford, Ont., propose to elect their waterworks commissioners.

The waterworks and sewerage extensions at Fort Frances have been completed.

Curators have been appointed for the plumbing business of Frank F. Taylor at St. Paul, Que.

Thos Jackson & Sons were awarded the contract to supply sewer pipe at Winnipeg on a bid of $20,544.

Charles Morrison, of the James Morrison Brass Mfg. Co., Toronto, spent Christmas and New Year's in Chicago.

The contract for the heating of the Isolation Hospital at Kamloops, B.C., has been awarded to H. Shotton for $999.

The death rate from typhoid has been cut in three at Verdun, Que., since the installation of its waterworks filtration plant.

H. T. Broughall is opening up business premises at Brandon, where he will handle electrical and gas fittings of all descriptions.

The Waldon Heating Co., Winnipeg, have secured the contract for the instalation of the heating plant in the G.T.P. roundhouse there.

The Kingston Waterworks Committee's report for last year shows that 126 services were installed and 2,000 feet of mains laid.

The Galt Brass Co. has purchased the McVicker Engine Works factory for an extension of their business. They will occupy the new premises in March.

Fire in the establishment of Prevost & Co., electricians, St. Hyacinthe, Que., did damage to the extent of $25,000 before it was subdued. Fully insured.

The Winnipeg Electric Railway will build a conduit to carry return feed wires, so that the water mains may not be damaged from escaping electricity.

W. F. Ramsay secured the contract to instal a Pease-Waldon steam heating plant in the Killarney, Man., town hall for $1,150, against three other tenders.

C. S. Eaton, secretary of the International Heating Company of Cleveland, spent Christmas week in Fort William on business in the interest of his company.

A. Welch, plumber and stove merchant, was re-elected alderman in Ward 4, Toronto, on New Years Day, R. M. Yeomans, another plumber, being runner-up in Ward 2.

The Provincial Board of Health has declined to approve Walkerville's sewerage plans on the ground that the proposed system would contaminate Windsor's water supply.

Plans for sewage systems and disposal plants for the Village of Nipegon and the towns of New Liskeard, Oshawa and Kincardine were approved by the Ontario Board of Health.

Frederick Simmons, of Simmons Bros., Kingston, is working on a contract for plumbing and tinsmithing in connection with the new assembly hall at the Brockville asylum.

From some cause unknown at present, fire broke out in the offices of the Jones & Moore Electric Company, Toronto, and did damage from fire, smoke and water estimated at between $4,000 and $5,000.

Bennett & Son, of Gananoque, are doing the plumbing and Halliday of

Kingston, the electrical work, in the $15,000 residence being erected in the Thousand Islands, by Mr. Reed of New York.

The heating and ventilating contracts for the new Logan Avenue public school, Toronto, were awarded to J. R. Seager, at $4,850. The heat regulation contract went to the Johnston Temperative Regulation Co at $775.

Gordon Latham, who has conducted a plumbing business at Gananoque, for several years, has sold out to Walter Martin, at present with Bennett & Son. Gordon intends to locate in British Columbia in the spring.

H. S. Creighton, who for the past year has been on the cost desk at the James Morrison Brass Mfg. Co., Toronto, has resigned to accept a similar position with Somerville, Ltd. His place at Morrison's is being filled by C. E. Thomas.

C. R. Bowers, plumber Chatham, Ont., has opened an office and shop on Lacroix Slip, immediately adjoining the Fifth St. bridge. The premises are the same as those first occupied some years ago by Carmell & Bowers, of which Mr. Bowers was a member.

The Toronto office and traveling staffs of the Standard Sanitary Mfg. Co., on Christmas eve presented the local manager, Wm. A. Porter, with a morris chair. The presentation was made by W. J. Spence, and Mr. Porter, though surprised, responded fittingly.

Construction work on the new building for the Colbert Plumbing and Heating Company, at Vancouver, will be commenced within the next few weeks. The structure will be of brick, two storeys in height, with a concrete foundation. The contractors are G. C. Mesher & Co.

Frank McCarter and Art. Manston, representing the Vanstone Plumbing and Heating Company, Vancouver, are instaling the furnace and steam heating of the new Coldwater hotel, at Merritt, in the Nicola Valley. Chris. Elkins, of the same company, is putting in the plumbing.

W. J. Christie, of the Canadian Heating and Ventilating Company, Owen Sound, has gone on a business trip to Winnipeg. Mr. Christie returned recently from Montreal where he effected very satisfactory arrangements for handling the company's lines of stoves and furnaces.

Norman Clark, of Adam Clark & Sons, plumbers, Hamilton, was re-elected alderman at the head of the poll in Ward 4 in that city, and Andrew Rodgers, another plumber, joins him at the council board, being third on the list in Ward 5 in his first contest for election.

Harry Reid, manager of the Regina Plumbing & Heating Co., Regina, visited Toronto recently.

Reg. Barnes, Calgary, who sells Taylor-Forbes heating goods in Alberta, with Calgary as his centre, was a visitor in Toronto and Guelph in December.

The recently established Chatham plumbing firm of Mitchell Bros., has moved from the premises at 179 King Street West, to a more commodious store a few doors distant, at the corner of King and Fourth Streets. Considerable improvements are being made to the new premises.

An overheated furnace in the dry goods house of Crumley & Co., caused the blowing up of a gas meter and a sudden conflagration which speedily filled the big building with smoke. The firemen speedily subdued the flames, but the fire caused some $5,000 damage by water and smoke.

The Modern Malleable Range Co., Chatham, Ont., capitalized at $40,000, has been granted an Ontario charter to manufacture heating and cooking apparatus and utensils for wood, coal, gas, steam and electricity. The provisional directors are Robt. Gray, Wm. R. Landon and Manson Campbell.

The Berlin Fuel Savers, Ltd., is a new $40,000 Berlin, Ont., company which has been granted a charter by the Ontario Government, to manufacture and deal in economy heat generators, fuel savers, radiators and spark arrestors. The provisional directors are S. A. Brubacher, A. C. Bender, J. A. Good, Geo. McAllister, I. W. Kuehner and Hy. Dumart.

Brantford will change its system of taxing street watering charges. In the past these have been levied at the rate of one mill on the value of assessed property, bringing in a revenue of about $7,500. Under the new plan the charge will be on frontage, the rate being 7½ cents per foot on business properties, and 3 cents per fot in residential sections, which will be watered twice a day.

Fred Somerville, Lorne Somerville and W. Keating, of Somerville, Limited, Toronto, Canada, attended a meeting of the Brass Manufacturers' Association at New York, on December 8, and Fred Somerville was re-elected a member of the board of directors. Some minor changes were made and a few additional lists on items not heretofore listed were adopted, The members also adopted a uniform centre to centre measurement for all styles of bath cocks of 7½ in. where offset supplies are used. This is to be the standard used by all manufacturers. The base of Fuller and compression work was advanced about 5 per cent.

Charles F. Smallpiece, Montreal, has resigned his position as director of Lewis Bros., Montreal, to accept the position of Montreal manager for the Taylor-Forbes Co., Guelph, succeeding the late Mr. McLaren. Mr. Smallpiece is widely known on account of his long experience with the hardware trade as salesman for Rice, Lewis & Son, Toronto, and director of Lewis Bros., Montreal.

R. Bigley's Toronto business has been formed into a company under the title R. Bigley Mfg. Co. The Ontario government has granted a charter to the new concern, enabling them to carry on, besides other kindred things, a general plumbing, heating, lighting and engineering business. The provisional directors are: A. E. Randall, G. M. Mulholland, A. Todd, Richard Bigley and J. H. Young.

At the last meeting of the Chatham, Ont., water commissioners the by-law relating to plumbers' licenses was amended in several particulars. Henceforth the water board will no longer issue plumbers' licenses. A number of "penalties" (never in practice enforced) for faulty work were eliminated also. Next year's council will appoint a plumbing inspector and will at the same time attend to the issuing of the licenses.

Alterations are being made on the Elmira waterworks system by means of which it will become possible to use the powerful steam pump of the Elmira Felt Company to its full capacity in the case of fire. An agreement has been entered into by the village council and the Felt Company, whereby service will be given at the cost of fuel, oil and atendance only. Any fire within the reach of 1,000 feet may be controlled direct without contaminating the water of the system.

At the annual meeting of the Winnipeg United Association of Plumbers and Steamfitters, the following officers were elected for the ensuing year: President, J. J. McRae; vice-president, Boyd Miller; financial and corresponding secretary, F. J. King; recording secretary, C. H. Timberley; treasurer, R. Neil; inside guard, J. Barber; outside guard, T. W. Mitchell; executive committee, C. Haliday, Guy English (three years); J. Cooper, George Hamilton (two years), and T. Simmons (one year); finance committee, G. Burwash, Geo. Hamilton and J. Cooper. C. H. Timberley, J. J. McRae and R. McNeil were appointed delegates to the Trades and Labor Council, and C. H. Timberley, C. Ridge and W. Watson, delegates to the Building Trades Council.

The death took place on Christmas day at Wawanesa, Manitoba, of W. E. Vanstone, president of the Vanstone Heating and Plumbing Company, of New Westminster and Vancouver. He went to New Westminster twenty years ago from Winnipeg, but was a native of Ontario, where he was born forty-one years ago. Deceased had been ailing for a number of months, and for the last year had lived with his brother, Dr. C. M. Vanstone, in the hope that his health would be benefited by the prairie climate. For three terms Mr. Vanstone was an alderman in New Westminster, and he was a high degree Mason. He is survived by his wife, one daughter and two sons. His parents are still living in Winnipeg, and his two brothers, Dr. C. M. and E. A. Vanstone, also reside in Manitoba.

Vancouver journeymen plumbers are talking of making a demand in the spring for higher wages. At present, 50 cents an hour is being paid, but a man is taken on only for the time that it is necessary to complete the work on hand. He may work half a day or he may work a week. Under such conditions, things are very uncertain, and a man does not know where he is at. Since a man is not paid by the day or the week, but by the hour, the suggestion is now being made that an increase in wages be demanded sufficient to tide a man through if he is not in steady work. On the other hand, some are of the opinion that if this is done it should only apply to work of a casual or temporary nature. If all plumbers received the high rate of pay, it would mean a very large increase all round and would greatly advance the cost of contracts. It is reasonable, they contend, if a man has steady work, or work extending over a week or a month, that he should not receive wages out of proportion, such as they would be if based on the proportion of a high rate to a man who receives but a day or two's work per week.

PATENT FOR SALE.

E. D. Barrett, 25 West 42nd Street, New York City, is offering for sale the Canadian patent rights of a flushing valve which has been manufactured and successfully used in the United States for about two years, the rights covering some recent improvements. The valve was invented by a practical plumber, it being noiseless and operating under high or low pressure can be set for any desired amount of water. It is claimed that it does away with closet tanks and reduces water bills fifty per cent.

TALES OF THE TRADE

TRAVELER'S NARROW ESCAPE.

Ernie Laidlaw, who covers western Ontario for the Standard Sanitary Company, Toronto, had a narrow escape from death or serious injury a few weeks ago. "Ernie" has become quite a camera fiend, and, wanting to see "Bill" Higgins, of Higgins & Large, at Brampton, one day, he followed him out to a job

"Bill" Large, of Higgins & Large, a Brampton Plumbing Firm.

and found him up on a scaffold eavetroughing the new Catholic church in that city. "Bill" stopped work and looked pretty while "Ernie" focused his camera, but just as the snapshot was taken a helper working on the roof got rattled and let his hammer slip from his hand, the tool missing the photographer's head by a couple of inches. Had it caught him unprepared the chances are that Laidlaw would have been unable to save himself from a serious fall.

Higgins & Large are working up a nice business at Brampton, and report having had a splendid run of work the past season.

CALGARY TRAVELER MARRIED.

Llewellyn McKenzie, Calgary, who represents the James Robertson Co., Winnipeg, in Alberta, took advantage of the holiday rates to visit Toronto before Christmas, and while here booked the biggest contract in his experience, entering into a life agreement with Miss Maud G. Masterman, an important condition of the deal being that the young lady should change her name to McKenzie, although in reality she may continue to be master-man.

Mr. McKenzie was one of the party who helped Lawrie Anthes lose his suit case at Calgary recently, and, peculiar to relate, the lost baggage arrived in town by express the same day McKenzie struck Toronto, Anthes having to pay an express bill of $4.50.

Mr. Anthes repaid McKenzie for the friendly interest taken in the suit case by hiring a preacher and arranging for an automobile wedding, the event taking place on Dec. 14, after which a honeymoon trip was made to New York and other eastern cities, the couple going west to Calgary before Christmas.

A good story is told about Mr. McKenzie's maiden speech, given at the wedding feast, when despite his protests he was called upon to respond to the usual toast. Blushingly he arose and intending to imply that he was unprepared to make a speech, and with his hand on the bride's shoulder, he stammered out: "This—er—this has been thrust upon me," and he sat down without further explanation.

The Plumber and Steamfitter wishes Mr. and Mrs. McKenzie a prosperous 1910 and a happy wedded life.

HOLIDAY GREETINGS.

Edward Gurney, president of the Gurney Foundry Co., Toronto, sent his friends and customers a neat Christmas greetings card in the form of a folder conveying "Gurney-Oxford" good wishes in well-chosen words.

A GOOD ADVERTISEMENT.

Because his 120 employees crowded the street in front of his place of business at 372 Bank street Saturday noon when drawing their weekly wage, M. M. O'Connell, plumber and steamfitter, has been reprimanded by the chief of police.

"I am very sorry if any of my neighbors have been inconvenienced by the great number of men I employ, but they are necessary to my business just now," said Mr. O'Connell when seen by the Ottawa Citizen about the affair. "I have such a lot of work on hand that to attempt to go around the different jobs and pay the men would be impossible, so I have to let them come to the office, although I must say it does create a small-sized riot."

Mr. O'Connell was formerly plumbing inspector at Ottawa and now conducts a big plumbing and heating business. Needless to say, the publicity given the incident in the Ottawa daily papers, was a good ad. for Mr. O'Connell.

PLUMBING TRADE PATENTS.

The following is a list of patents issued by the Canadian patent office on Nov 23, 1909, relating to plumbers' and steamfitters' appliances, and furnished by Fetherstonhaugh & Co., 5 Elgin St., Ottawa.

122010. J. J. Cosgrove, Philadelphia, water closet connections, Standard Sanitary Mfg. Co.

122011. L. H. Miller, Mount Eden, Cal., interlocking devices for acetylene gas machines.

122013. J. Darling, Chicora, Pa., gas generators, Smokeless Heat and Power Company.

122051. J. Allingham, Chicago. Waste plug mechanisms for lavatories.

122064. A. Bruce, Glasgow, Scotland, air gas plants.

122071. L. A. Cornelius, Grand Rapids, valve apparatus vending machines.

122081. J. F. Fraser, Ottawa, acetylene gas generators.

122082. E. Gebhardt, Easton, Pa., valves for hot water heating systems.

122088. A. G. Holmes, Pittsburg, nutating disks for meters.

122092. G. Kerr, Astoria, Ore., lamp burners.

122097. L. Lawnin, Edwardsville, Ill., flushing devices for water closets.

122099. T. Lydon, Baltimore, Md., kitchen sinks.

122106. C. W. Metcalf, San Diego, Cal., acetylene gas generators.

122140. W. E. Travers, Oakland, Cal., acetylene gas generators.

121845. E. Lyon, T. H. Hickok, Omaha, water heating apparatus.

121847. F. Yockey and C. C. D. McLeod, Sioux City, safety gas valves.

121876. N. English, Detroit, return steam traps.

121877. J. M. Evens, Birmingham, Ala., swabs for piston rods.

121897. W. R. Malcolm, Toronto, soil pipe fittings.

121922. J. Schwab, Winnipeg, air warning attachments for house furnaces.

121942. J. E. Webb, London, Eng., filters.

121948. J. M. Witner, Lancaster, Pa., heaters.

121990. C. E. Vrooman, Beverly, Ohio, exhaust devices for steam boilers.

121992. F. F. Dier, Winnipeg, gas lighting appliances.

121996. J. Schwab, Winnipeg, combined heating systems for a plurality of boilers.

121979. A. A. Bedard, Detroit, soldering tools.

122173. R. F. Dockery, Santa Monica, Cal., machines for making continuous pipes.

122189. G. C. Madsen, Worcester, Mass., water heaters.

122207. J. G. Banjock, Zehmer, Pa., automatic valves.

122216. M. J. Brierty, Chicago, heat controlling apparatus.

122284. D. M. Nesbit, Leicester, Eng., automatic regulators for steam and other heating systems.

122303. M. F. Smith, Lowell, Mass., steam heating apparatus.

STANDARD IDEAL CHANGE.

John J. Laferme, F.I.S.E., has been appointed eastern sales manager at Montreal of the Standard Ideal Co., Port Hope. Mr. Laferme, until recently, had charge of the company's business in Europe, and although he will be now located in Montreal, his staff in Paris will, amongst other lines, continue to transact the sales of the Standard Ideal Co.

Before joining the Standard Ideal, Mr. Laferme was foreign sales manager for

JOHN J. LAFERME,
Who has been appointed representative of the Standard Ideal Co. at Montreal.

the Standard Sanitary Manufacturing Company, Pittsburg, being located partly in Europe, and partly in Pittsburg. He is a Fellow of the Institute of Sanitary Engineers, of England, and has studied architecture in Paris. His wide experience enabled him to render valuable assistance to the United States and French Governments at the Paris Exposition in 1900, for which the French Government honored him with the distinction of "Officier d'Academie."

The Times Printing Co., Victoria, are calling for tenders for a new office building.

HANDSOME CALENDAR FOR 1910.

The Kerr Engine Co., Walkerville, have issued to their customers a decidedly handsome calendar for 1910, it being a copy of Wilm. Steelink's celebrated painting "The Shepherdess and Her Flock," the view being a Dutch pastoral scene of beautiful coloring. It is in hanger form 15x22 inches in size and would do credit to any plumbing shop —or home. It is just such a scene as could be used on the wall of a model bathroom to make it appear more homelike. Plumbers who have not received a copy should make application on their business paper as it is too valuable for promiscuous distribution.

MONTREAL'S PUBLIC BUILDINGS.

The crusade on some of Montreal's unsanitary and badly ventilated civic buildings continues, and J. E. Dore, the city sanitary engineer, after condemning No. 5 Police Station in no unmeasured manner, has now tackled the City Hall. In his report Engineer Dore is especially severe on the cells in the police quarters.

"The air in the cells is most foul. They are frequently overcrowded. As to ventilation, there is little or none. Bad conditions also exist in the dormitories where the policemen sleep. In the guard room, which is next to the big sleeping room, there is very bad ventilation. In the detective department there are also unsatisfactory conditions. There is scarcely, indeed, an office in the whole of the City Hall that is properly ventilated, that is not overcrowded and which complies with modern sanitary conditions."

The municipal authorities are inactive and have been severely criticised for allowing the city to continue under the disgrace of not having one public convenience station in the whole of its territory.

STANDARDS OF SOIL PIPE.

Walter D. Nolan, Washington, D.C., president of the National Association of Master Plumbers, has requested the Committee on Standardization, appointed by Ex-President Halsey, to confer with a committee from the American Society of Inspectors of Plumbing and Sanitary Engineers, and other interested organizations with the object of establishing soil pipe and fittings standards.

Tenders for the construction of a public bath at Montreal were opened, and the contract was awarded without discussion to the lowest tenderer, D. Lalonde, whose price was $24,448.

New Buildings, Water and Sewerage Systems

Opportunities Offered by Municipalities and Private Enterprise for New Plumbing, Heating, Ventilating or Sanitary Systems—Work Being Undertaken in Every Section of the Dominion.

Municipal Undertakings.

Bridgeburg, Ont., has bought a site for its sewerage disposal works.

Wallaceburg, Ont., is contemplating the instaling of a waterworks system.

Revelstoke's council has given notice of the construction of a number of sewers.

Dunnville's town council has passed a by-law and will go on with the construction of its sewerage system.

Sewer and waterworks extensions to cost $160,000 will be constructed next year at Saskatoon.

Barton Township council will supply a water system to residents on Hamilton mountain.

North Vancouver's proposed complete sewage system will cost approximately $800,000.

Work on the construction of a sewage disposal plant at the foot of Omemee Street, St. Thomas, has been commenced.

J. H. and Hugh Murphy, of Buckingham, Que., have waterworks construction contracts at Weyburn, Sask., worth $50,000.

The Winnipeg Board of Works have recommended the construction of a trunk sewer for Elmwood at an estimated cost of $21,000.

J. Gault, has reported favorably on the project to supply Edmonton with water from Pigeon Lake by a gravity system. Initial expenditure of $2,000,000 is necessary.

Tenders addressed to the Minister of Public Works, Victoria, will be received until January 19, 1910, for the construction and completion of a permanent system of sewerage for Prince Rupert.

Plans of the land required for the filtration beds on the lake front for the New Toronto sewage disposal scheme have been registered at the County Registry Office. A by-law will probably be submitted at an early date authorizing the commencement of the work.

A reduction steam valve has been installed at the St. Thomas power house, and that city's light, heat and power department is now able to supply live steam through the new steam heating pipes, in place of the exhaust steam, hitherto used.

Public Buildings.

Brantford has decided to erect a municipal abattoir.

The C. P. R. propose to build a $3,000 station at Eganville.

A new school of two storeys will be erected shortly at Portage la Prairie.

St. Matthews Anglican church, Brandon, will build a new edifice next year.

A Winnipeg syndicate propose erecting a $25,000 opera house at Prince Albert.

The erection of a public library is being considered by the citizens of Fernie, B.C.

The new church to be erected at Montreal, by the Christian Jewish denomination, will cost $20,000.

J. W. H. Watts, Ottawa, is having erected a stone church at South March, Ont., to cost about $5,000.

The by-law to raise $50,000 for public baths and gymnasia was endorsed by the Winnipeg ratepayers.

St. Bartholomew's Anglican congregation, Toronto, propose erecting a new $25,000 edifice.

The Railway Commission has ordered a union station to be built at Regina by the C.P.R., C.N.R. and G.T.P.

A new Catholic school to cost $25,000, will be erected at Fredericton. Contracts will be let early in January.

Work on the Lacombe Home at Saskatoon, will be recommenced in April next. The building will cost $75,000.

The Grandview, B.C., school trustees will erect an addition to the present school next spring at a cost of $5,000.

The by-law to raise $40,000 for the erection of a public school has been passed by the ratepayers of Chilliwack, B.C.

The new Parkdale Public School Toronto, is to be constructed at a cost of $5,000. A permit for the building has been granted.

Nanaimo is to have a new opera house and dance hall. The whole cost of the building is estimated at between $30,000 and $40,000.

J. W. H. Watts, Ottawa, is preparing plans for a new church building to be erected at Fitzroy Harbor, estimated cost is about $4,000.

The plans for the new academy at Sydney, were discussed and plan No. 8 chosen. The estimated cost is $52,000, exclusive of heating.

Three new buildings—observatory, chemical building and mining building—are in course of construction at Queen's University, Kingston.

The new school for crippled children, to be erected in the grounds of the Children's Memorial Hospital, at Montreal, will cost upwards of $15,000.

The congregation of West Street Methodist Church, Owen Sound, has purchased the site for a new church, which, it is estimated, will cost $25,000 to erect.

The Canadian Northern Railway will proceed at once with the erection of a temporary station office and freight shed at Ottawa, to cost about $5,000.

The new $25,000 post office to be built next year at Mitchell, Ont., will occupy the present town hall site, necessitating the erection of a new municipal building.

The Collegiate Institute Board has decided to ask the St. Catharines city council to provide the sum of $10,000 for an addition and improvements to the present building.

The Toronto Board of Control has approved plans for the new wing to the Isolation Hospital, and will soon ask bids for the construction; estimated cost, $80,000.

The Victoria school trustees have decided to ask for $10,000 for a new school for the east end of that city, to be built on land recently purchased for this purpose.

Work will be started on the customs house at Revelstoke next spring. The sum of $10,000 is on the estimates to provide for a start being made with the building and tenders will be called about May next.

The plans and specifications for the new Delatre Street school and the remodling of Beale Street school at Woodstock, Ont., were presented before the board and were adopted. Tenders are invited at once.

Property at Toronto, has been purchased by the Separate School Board as a cite for a new high school to replace the De la Salle Institute. Work on the erection of the new building may not go on for some time.

A. A. Post, Buffalo, is preparing plans and will soon receive bids for a new building for St. Michael's Hospital, Toronto. It is to be four storeys and basement, of brick and structural steel, fireproof; estimated cost $200,000.

Dr. Dagenais, chairman of the Montreal Health Committee, has recommended a suitable building for the civic hospital near Back river for the treatment of tuberculosis. Building Inspector Chausse; estimates call for $12,000 to $15,000 for alterations.

The new Lampson Street school, Victoria, is to be built by Thomas Ashe, the contract having been awarded to him by the public works department. Work is to begin at once, and is to be hurried on to completion. The total contract price is $14,854, which includes the Rutley tubular furnace heating system.

Plans for the new Alberta university have been accepted by the Senate, these providing for a building 230 x 72 feet in size, with wings to the north and south ends 110 x 38 feet. Provision was made for a library to accommodate from 15,000 to 20,000 volumes. It is estimated that the biulding will not be completed inside of three years, and will cost $500,000.

Plans are under way for a new Methodist Theological College, which is to be erected at Strathcona, in connection with Alberta College, at a cost of $100,000.

A company is being formed for the purpose of erecting a sanitarium at Little Manitou Lake, three miles from Watrous, Sask. Plans for the erection of over 200 cottages, early next spring, are under way.

Dovercourt Presbyterian church, Toronto, will erect a Sunday school hall on the lot at the rear of the present edifice, that will accommodate 1,000 scholars. The cost will be $80,000, and the work will be begun next spring.

Revised plans of the union station, which is being erected at Fort William by the C.P.R., are on file in the office of Mayor Peltier, and show that the building will be considerably larger and more imposing than at first supposed. These plans call for an expenditure of $150,000.

The Hamilton, markets, jails and police commitee have approved of the plans submitted by the Police Commissioners for a new central station, at a cost of $44,000, and an east end station, estimated to cost $60,000, and a by-law will be submitted to the ratepayers in January.

A company has been formed with the object in view of building a new theatre for Victoria. The city is to donate a site near the Empress Hotel, and the building is to cost not less than $100,000. Work to commence within three months of the signing of the agreement with the city.

In their report for 1908-1909, the Montreal Catholic School Commissioners announce that a new school for girls, on Wellington Street, and another for boys, on Centre Street, will be built this year in Point St. Charles, while the Meilleur School will be enlarged. A school for girls will also be built in St. James Ward.

In reporting upon the advisability of establishing an underground lavatory in the neighborhood of Dundas and Keele Streets, Toronto, City Engineer Rust states that at that point the sewer is too high, and that an overhead lavatory will have to be erected. Such a lavatory for both sexes, could be erected at a cost of $9,000.

A new and thoroughly up-to-date Catholic hospital will be built at Prince Albert next spring, and already the plans and specifications have been drawn and approved. The new hospital will have accommodation for one hundred patients, and will be built at a cost of $100,000. All the financial arrangements have been completed and the site chosen.

A western company, capitalized at $[illegible], is being organized for the purpose of building and operating a chain of hotels along the Grand Trunk Pacific. A number of leading contractors of Winnipeg are on the directorate. Among the points at which they will build are Saskatoon, Melville, Watrous, Wainwright and Edmonton.

General Building.

The Bank of Hamilton intend to build a branch at Vancouver.

The Dominion Bank purpose building shortly a large block at Edmonton.

The Bank of B. N. A. are to erect a building at Semans, Sask., in the spring.

Wm. Sexton, Hamilton, has taken out a permit for a brick house to cost $3,500.

Kenneth McLeod will erect a business block opposite the new Edmonton post office.

Plans are under way by the Canadian Pacific to build a new hotel at Nelson, B.C.

Herbert Weston is preparing to erect a large store and office block at Saskatoon.

New additions will be built to the Central and Oriental hotels, at Revelstoke.

Tenders will be called for the new Y. M. C. A. building at Victoria in January.

The Winnipeg Builders' Exchange will erect a temple costing a quarter of a million dollars.

The Bank of Montreal will erect next spring in Port Arthur, a three-storey building for offices.

A. Viens is to erect a three-storey building at Montreal, at a cost of $10,000, to house 12 families.

Robert Neville, contractor, Montreal, will erect a terrace of seven semi-detached houses at Outremont.

Colborne P. Meredith, is erecting a residence and surgery at Ottawa, for Dr. John Robertson, at an estimated cost of $12,000.

Luxor Temple, of the Mystic Shrine, has taken up the project of erecting a Masonic Temple at a cost of $30,000, at St. John.

The Canada Permanent Mortgage Corporation, will erect a large block at Edmonton. Excavation will be started in the spring.

The Merchants Bank of Canada plan shortly to erect a handsome block on the site of their present building at New Westminster.

A permit was issued at Montreal to Jas. H. Maher for a new apartment house to accommodate 26 families, and to cost in the neighborhood of $18,000.

Plans for a good-sized hotel at Fort George, B.C., have been prepared. Mr. Clarke, manager of the Fort George Lumber & Navigation Co., is interested.

F. Wilson, of Lassen, Alta., has had elaborate plans prepared at Calgary for a large hotel, which he intends to erect at the new Grand Trunk Pacific town of Lassen.

Jeffrey Bros. were awarded the contract for building the Williams & Garland block at Portage la Prairie, on a bid of $10,900.

The I. C. R. management are considerining the establishement of first class hotels in the maritime provinces and on the Lower St. Lawrence.

Jos. Sawyer, architect, Montreal, has awarded contracts for the erection of a residence there for J. Beaudry, to A. Huberdeau and A. Brousseau.

The Canadian Foresters Hall Temple, Ltd., held a meeting recently and decided to proceed with the erection of the new Foresters' Hall, on College Street, Toronto, in the spring.

A new wing to cost approximately $20,000 will be erected next spring, by St. Mary's C. L. and A. A. to their club building at Toronto.

The C.P.R. are said to me contemplating the building of a large modern downtown hotel on the old St. Lawrence Hall site, at Montreal, which was purchased by the company three years ago.

Arthur J. Bird is working on plans for a five-storey apartment house, which will be erected for Mr. Peter Agren, at Vancouver. It is estimated the cost will be about $50,000, and construction will start almost immediately.

The following building permits were recently issued in the Oak Bay, B.C., municipality:—R. R. Jones, a two-storey house, to cost $4,500; J. S. Floyd, a two-storey house, $5,000; Dr. H. Rundle Nelson, a two-storey, house, $6,000.

J. P. MacLaren is erecting at Ottawa a residence for W. G. Matthews, of the Geo. Matthews Co., at a cost of about $20,000; and is also erecting a fine brick residence for Samuel Gamble, of the Murphy-Gamble Co., at a cost of about $16,000.

A three storey hotel, costing in the neighborhood of $80,000, with accommodation comprising some fifty bedrooms, is to be erected on Salt Spring Island, B.C. The projector of the new enterprise is a Vancouver syndicate headed by F. W. Law.

The property at Ottawa occupied by the Crown Hotel with other land and buildings adjacent has just been sold to Allan Keefer and J. P. Shaver. The intention is to put up a modern, seven-storey fire-proof hotel on the property, containing from 200 to 300 rooms. The deal, including the price of the hotel, will cost, all told, $1,000,000.

Plans have been adopted for the erection of a handsome four storey brick hotel on the site of the present Brunswick Hotel at Brandon. The proprietor, H. Johnson, has signified his acceptance of Architect Elliott's drawings and tenders will be called for early in the New Year. The new building will contain eighty rooms, many equipped with private baths, etc. It is expected the hotel will be in operation next summer.

PLUMBING AND HEATING MARKETS

MONTREAL.

December 31.—Although trade generally has let up considerably, several lines are still moving prominently, and for the time of the year great business is being done. The continued mildness of the weather is very conducive to active building operations, and all the way round there is a good tone and the feeling that 1910 will be a record year.

Manufacturers are not altogether sorry at the respite in the flow of the orders as it will give them a little time in which to get ready for the spring. Even now delivery in some lines is being made as fast as parts can be assembled.

Soil pipe, radiators and boilers are showing prominence. The market is firm and no important change is announced. Solder has not been affected by the advance, and good orders are reported. Little speculative buying is yet being done by users, but the probability is that stocks will be considerably added to before long, especially as the markets have a hardening tendency.

Soil Pipe—For the time of the year there is still an active demand for soil pipe. There is, however, not the rush lately noticeable and manufacturers have a better chance of turning out stock, The market is unchanged, and we quote light 69, medium and heavy, 70 off.

Lead Pipe—A fair demand has been noticed, and the hardening of lead products generally has induced more speculative buying. We quote pipe and waste at 27½ off; traps and bends at 50; caulking lead, 5c per lb.

Solder—The advance of ½c in half-and-half has not checked the demand, and good trade for the time of the year is reported. Plenty of solder is being used in a jobbing way. We quote half-and-half 20c, wiping 18½c.

Iron Pipe—The demand has fallen off, although fair orders are going through. No important changes are announced, and we quote; ¼-in. black, 63; galvanized, 48; ⅜ black, 59; galvanized, 44; ½ black, 69; galvanized, 59; ⅜ to 4-in. black, 71½; galvanized, 61½.

Radiators and Boilers—There is still a very good demand, and boilers and radiators are still being shipped out freely. The pressure, however, has let up, and the trade have now a better chance of accumulating some stock. The market is unchanged, and we quote:—Steam boilers, 60 and 10; hot water boilers, 50 and 10; wall and hot water radiators, 50 and 10; steam radiators, 50, 10 and 2½ per cent.

Scrap—The scrap market is on the quiet side. Tea lead has advanced ¼c. Other lines are unchanged. We quote; Heavy copper and wire, 11c; light copper bottoms, 10c; heavy red brass, 10c; heavy yellow brass, 8c; light brass, 6¼c; tea lead 2½c; heavy lead, 2¾c; scrap zinc, 3c.

Metal—The strong tone of the tin market continues and jobbing prices are now at 35½c; Copper is unchanged at 14½c. Imported and domestic lead is at $3.70.

TORONTO.

December 30.—A decidedly quieter business is being done in plumbing supplies just now, and master plumbers report new work as being very much easier. Jobbing and repairs are the order of the day.

It is yet rather early to prognosticate as to this year's work, but judging by the number of building permits already issued here in Toronto and throughout the province generally, more particularly in the larger centres, it is beginning to be felt that 1910 will surpass last year—and that is saying much, seeing that 1909 was one of the best plumbing years of recent times. Both master plumbers and supply men expressing satisfaction with the past year's business.

Already some steamfitters' supplies have been sold for spring. This is the first line to feel the touch of business for 1910. Present trading is helping along lead pipe, solder and some fittings, but on the whole business is rather dull, compared with several weeks ago, though this is expected at this season.

Enamelware—There is not now the briskness in demand for enamelware lines there was during the fall. The easing off, however, has given the trade a chance to get in supplies for next season's business. The factories are continuing to run full time getting up stock to prevent the getting behind with orders that existed during the latter half of 1909. The wanted lines call more especially for the medium grade of baths, sinks and closet combinations to meet the requirements of the ordinary-sized residences erected to-day. Laundry tubs are coming into more general use. Prices are unchanged.

Brass Goods—The Christmastide was a good season for brass wares, especially chandeliers and electroliers. Even yet there is a nice trade continuing as a result of the Christmas season. On brass work the market is firm and strong, with prices unchanged. High grade compression is 60, and standard 65 per cent.; fuller work is 70 per cent.

Iron Pipe and Fittings—Fittings, both cast iron and malleable, are firmer, though some are yet sold at the old prices. Quotations show a range from the old to new and stiffer figures. Standard bushings run from 60 to 70 per cent., instead of 70 flat; malleable bushings, 60 to 65 per cent., instead of 65 straight, and nipples, 70 to 75 and 10, instead of the straight 75 and 10. Demand has come around now for larger sizes of iron pipe for steamfitters. Some of this is for spring delivery.

Lead Pipe—Pig lead is showing higher prices and with the better demand for lead pipe it would not be unusual to soon see higher prices, though as yet the quotations remain unchanged. Pipe and waste are 27½ per cent. off; caulking lead, 4¾c a pound, and traps and bends, 50 per cent. discount.

Soil Pipe—Without showing unusual features soil pipe is selling steadily, both for jobbing and future delivery. Light pipe is 60 and fittings 70 per cent., unchanged quotations from last issue.

Solder—Unchanged in price with fairly good trading being done. Half-and-half is 19c, and wiping 18½c.

Boilers and Radiators—The quiet season is still on, though estimating for new work presages good business for this year, beginning with the early spring. Quotaions are as yet unchanged with hot water boilers and radiators 50 and 10, and steam radiators 50, 10 and 2½ per cent.

Old Metals—Dealers are offering unchanged prices: Copper, 11c to 12c; brass, 6½ to 10½c, according to grade, and lead 3c to 3¾c.

APARTMENT HOUSE PLUMBING.

Domestic Engineering (Chicago) for Dec. 25, devoted all its space to a special article on the plumbing and heating of the Belnord, New York's greatest apartment building, a twelve-storey building occupying an entire block, with an interior court 50x300 feet, paved, planted with trees, lighted and decorated as a small park. Refrigerators are cooled with refrigerating coils, no ice being required. A large laundry is located on the roof, while each kitchen is also fitted with a laundry tub and sink. Flushometers are used in all bath rooms, the closets being located under large windows, as no tanks are required. The article is by Lucy Cleveland, and is particularly interesting to those doing apartment house plumbing work.

P. E. Macdonald & Sons, lately sales agents for the Standard Ideal Co., in Montreal, are no longer acting in the interests of this firm, but are paying all their attention to their Toledo and Jardine pipe-threading tools, their new premises being located at 80 St. Francis Xavier Street, Montreal.

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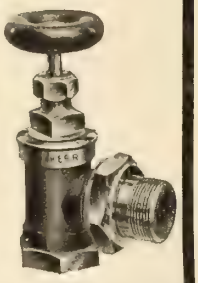

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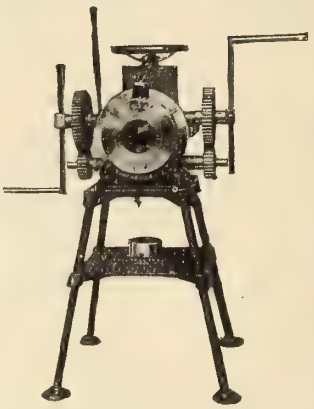

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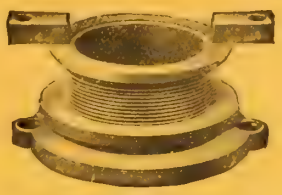
Equipped With Universal Chuck



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No modern radiator has so many points in its favor. Here are a few of them:—It will save labor, lessen cost of household repairs, and minimize insurance premiums. It will increase the value of the property in which it is installed from 10 to 15%, and will minimize housecleaning by doing away with all dust and ashes. Send for booklet and full particulars. The arguments in favor of handling the "Sovereign Monarch" cannot fail to convince you.

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Plate F
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Dimensions Lavatory 18 x 21" Oval Bowl 11" x 14" Back 8"

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that is just as good, and it is the incomparable, unapproachable pioneer of HOT WATER Boilers, 30,000 of which are in active service—its name, need we tell you, is : : : :

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If you order a "Vulcan" please see that you get it. If you are satisfied with imitations, see that you get the lowest prices at which they are sold. The high grade of materials and manufacturing standards justify our prices asked for the "Vulcan."

All fitted parts of "Vulcans" are milled. Every detail of their manufacture insures extended wear and true interchangeability of parts.

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SUPERIOR DROP-FORGINGS
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Plumbers' Supplies

We have now every facility for giving the Plumbing and Steamfitting Trade prompt and efficient service.

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MacLean Publishing Co. 10 Front St. E., Toronto

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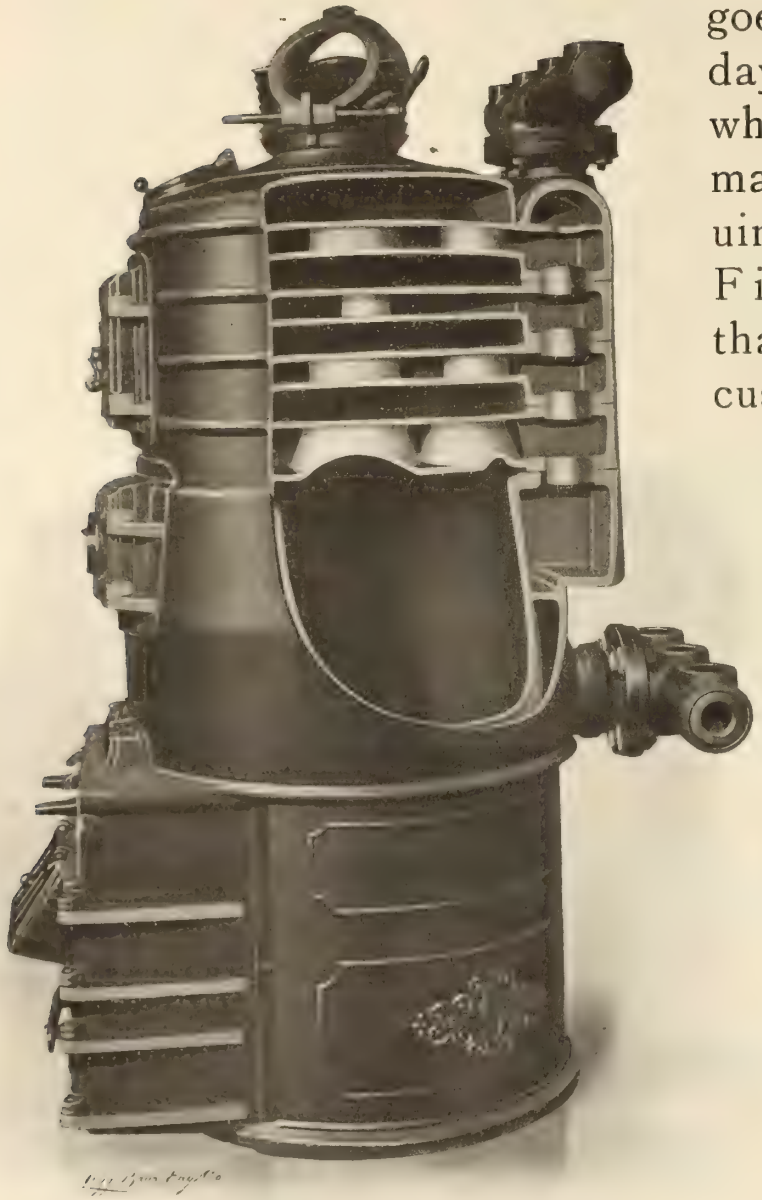

Sectional View Gurney-Oxford Boiler with "Economizer" fitted on top.

"GETTING after you with both feet," as the saying goes. It's little use now-a-days showing fine pictures—what's wanted is inside information, and by all that's genuine—here you have it. Mr. Fitter, here's the Boiler that's going to satisfy your customer and incidentally boost your reputation—

And here's part of the evidence:—Every Gurney-Oxford Boiler is fitted with an "Economizer" as a first length of pipe (see illustration—a marvellous fuel saver. This in itself is a winner. Then you have sloping walls around fire-pot and on first-water section—Economists — vital heat factors. Then again you have push nipple joints, mind you, no rubber gaskets used—naturally no leakages. Finally, a properly constructed revolving grate. Of course you'll want to tell your customers about this Boiler, and to help your story we've prepared a very handsome book on "Heating the Home" with the Gurney-Oxford Boilers and Radiators. We'll send you one or a dozen copies, just as you say, but under no circumstances should you be without one. Get our side of the question then leave it all to reason.

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Honeywell Heat Generators

of various sizes and for different purposes have been manufactured and sold in the United States, Canada and foreign countries.

The Honeywell System has established itself as one of the standard systems of heating and is recognized by the experienced trade everywhere as the most satisfactory system of hot water heating. Failures with this system are absolutely guaranteed against.

Honeywell Heat Generators are manufactured in Canada for the Canadian trade and are recommended and sold by all of the leading boiler and radiator manufacturers and jobbers in the Dominion.

Over 600 Honeywell Systems of hot water heating have been installed in the Province of Quebec. All of the leading fitters use it exclusively. For full information, write to

The Honeywell Heating Specialty Co.
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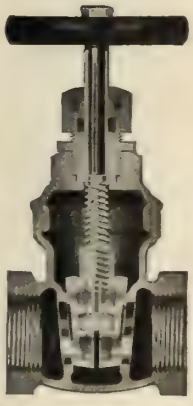

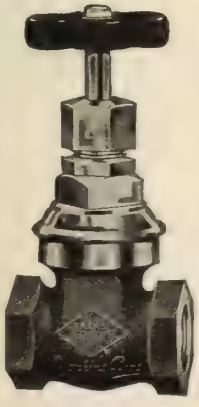

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GATE VALVES

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A Thoroughly Reliable Gate Valve for Steam, Water, Oil, Gas or Air. A trial will convince you that it will pay you to use these valves on all your work.

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Canadian Patent Rights offered for sale or on royalty basis

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By J. J. COSGROVE

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Special Attention is paid to:—Water Supply Systems, Physics and Flow of Water, Softening, Filtering and Purification of Water, Hot Water Supply, Determining Proper Size of House Drains, Leader Pipes, etc.

Very Valuable to Those Laying Out Work in Large Buildings

278 Pages Cloth Bound 169 Illustrations
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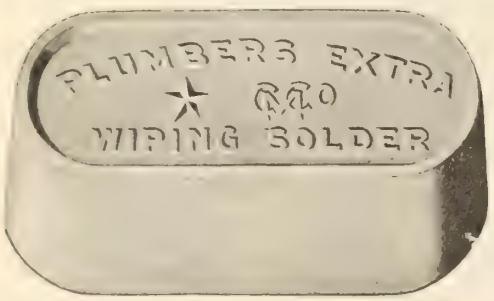

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Get the solder with the tin in. If you want a first-class Joint use EXTRA STAR WIPING SOLDER. You must have it. If your supply house is unable to fill WE WILL.

The Canada Metal Co., Limited - - Toronto, Ontario

A Morse and Dexter Improved Valve Reseating Machine

TO STEAM USERS:

You have all experienced the annoyance, trouble and expense caused by **Leaky Steam Valves.**

The **Improved Morse and Dexter Reseating Machine** will repair **in position** any size or make of steam valve.

No special skill required to operate this machine.

The universal chuck on the Morse and Dexter will fit any valve.

No grinding of valve seats after using this machine.

Guaranteed to make any valve perfectly steam tigbt.

Furnished on thirty days' trial.

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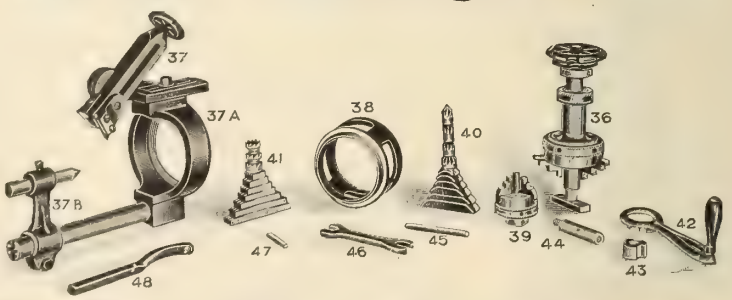

Darling Brothers, Limited, TORONTO Head Office and Works, **2-4 Ottawa St., Montreal** WINNIPEG

"VOSPER"
PIPE CUTTERS
"The Cutters that Cut"---For 1910 and hereafter

"Stop the Losses this New Year and Hereafter in Your Shop"

You have sometimes detected a waste of time, which is money, going on in your business; if not, start now and watch. OUR AIM IS TO MAKE A PART OF THIS WASTE A THING OF THE PAST, for every time you have detected a leakage in your shop there are twenty times which you knew nothing about. Would it not be of interest to you to stop one PART of this loss (PIPE CUTTING) once and for all?

YOU SAY:—Naturally I know of these losses, but I have made money without your Cutters.

TRUE, SIR; and doubtless you realize the value of every penny, but to make more should be your aim.

For an example of part of your waste, we will take PIPE CUTTING and PIPE REAMING and put same to figures, showing a cost the old way and a saving the—**"VOSPER WAY"**

Example:—A small heating job where you have to cut 300 pieces of pipe and ream.

TIME--(Old Way)

1 Man makes a cut in 3 minutes
1 Man cuts 20 cuts per hour
1 Man cuts 300 cuts in 15 hours
15 hours' time at $0.20 per hour....$3.00
Reaming 300 pieces 5 hours at $0.20.. 1.00

Cost.....$4.00

(Note---No extra cost included for extra wheels or time lost in split pipe or time lost in making crooked cuts.

***Time--*"VOSPER" Pipe Cutters, which cut the Pipe and Save Reaming.**

300 cuts:
1 Man cuts a pipe in 2 minutes
5 hours saved at $0.20.....$1.00
Reaming saved..... 1.00

Amount saved on 300 cuts.....$2.00

(Note—No extra cost included for grinding cutters (if needed). No extra cutters needed, as same will last over a year. No splits in pipe, as it is impossible to do so, and no time lost making crooked cuts, as this is also impossible to do with—**"VOSPER" Pipe Cutters**.

ADVICE: -If you do not have one of the **"VOSPER" Pipe Cutters**---"The Cutters that Cut"---you will be paying for one just the same by using old methods, and your loss will continue to run on when you might have saved the leakage, which is money. Can you afford to be without a **"VOSPER" Pipe Cutter**?

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Plumber and Steamfitter

and Sanitary Engineer of Canada

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Circulating amongst Plumbers, Steam, Hot Water and Gas Fitters, Sanitary Inspectors, Heating and Ventilating Engineers, City Engineers, Boards of Health, Architects, etc.

TORONTO, JANUARY 15, 1910

PLUMBERS' EXAMINATIONS AT CALGARY

Reference has been made in previous issues of The Plumber and Steamfitter to the by-law recently adopted by the City of Calgary requiring both master and journeymen plumbers to pass examinations before a regularly-appointed board, consisting of one master, one journeyman and the plumbing inspector.

As this is a progressive action which ought to have the effect of raising the standard of work done in Calgary, and as The Plumber and Steamfitter believes other Canadian cities should follow Calgary's example, the by-law, which is very brief, is reproduced as follows:

By-law No. 982.

A by-law of the City of Calgary to provide for the examination of plumbers and to amend by-law No. 826 by repealing sub-sections 3 and 4 of section 1 of said by-law.

Whereas, it is deemed necessary for the preservation of the public health of the City of Calgary to establish a Board of Examiners of Plumbers, therefore, the council of the City of Calgary enacts as follows:

1. That no person shall after 90 days from the passage of this by-law, follow, engage in or work at the trade or occupation of plumbing in the City of Calgary until he shall have first procured a license therefor in accordance with the provisions of this by-law.

2. Any person desiring to follow, engage in or work at the trade or occupation of plumbing in the City of Calgary shall first make application to the Board of Examiners hereinafter provided for and shall at such time and place as such board shall designate undergo such examination as to his qualifications and competency as the Board of Examiners may direct.

3. There is hereby created a Board of Examiners of Plumbers, consisting of the plumbing inspector for the City of Calgary and two members who shall be practical plumbers (one shall be a master plumber and one a journeyman plumber) appointed by the Board of Health for the City of Calgary, within thirty (30) days after the passage of this by-law, for the term of one year each, unless sooner removed by the Board of Health.

4. One of the members of the board so appointed shall act as secretary. It shall be the duty of said secretary to preserve and keep all records, papers and books which are required by by-law or by the board and to do or perform such other work as may be required by the board.

5. Said Board of Examiners shall within thirty (30) days after the appointment of said members meet and organize by the selection of a chairman and secretary, and they shall designate the time and place for the examination of all applicants for license. Said board shall examine the applicants as to their practical and theoretical knowledge of plumbing, house drainage and ventilation, and also as to their knowledge of the by-laws of the city regulating such work. Such examination shall be made in whole or in part in writing. If satisfied as to the competency of the applicant the board shall so certify to the license inspector for the City of Calgary and such inspector shall thereupon issue to such applicant a license in accordance with such certificate authorizing him to follow, engage in or work at the trade or occupation of plumbing, either as a master or employing plumber or as a journeyman plumber, in the City of Calgary. The fee for the license of a master or employing plumber shall be twenty dollars, for a journeyman plumber it shall be two dollars; said license shall be renewed annually upon the payment of five dollars for a master or employing plumber, and one dollar for a journeyman plumber.

6. In the case of a firm or corporation, the examining and licensing of, and the granting of a certificate as a master or employing plumber to any one member of the firm or the manager of the corporation, shall satisfy the requirements of this by-law; but all members of a firm or corporation working as journeymen plumbers will be required to have a journeyman plumber's certificate.

7. Any plumbers failing in the examination before the examining board shall have the right to appear before such board thereafter to take additional examination at the next regular sitting of the board.

8. The license herein provided for of any master or journeyman plumber may at any time be revoked for incompetency, dereliction of duty or fraudulent use thereof after a full and fair hearing by a majority of the examining board, but an appeal may be taken from said examining board to the Board of Health, whose decision shall be final.

9. Sub-section three and four (3 and 4) of section one (1) of by-law No. 826 are hereby repealed.

10. Any person guilty of an infraction of this by-law or any part thereof shall be liable on summary conviction to the penalties prescribed in section 149 of ordinance 33 of 1893 of the Northwest Territories.

The examining board has been holding frequent meetings, examining the masters and journeymen working in the city, but have not yet completed their work. When this is done meetings will be held monthly. As the examination on theory is a written one, it has taken a number of meetings to examine these papers.

It is already admitted, even by those who have failed to pass, that the examinations have done much in an educational way. The questions asked relate to syphonage, back venting, atmospheric pressure relating to plumbing and hot water circulation for domestic service, also the proper method of connecting certain plumbing fixtures to the drainage system. The board changes the questions at each sitting, but has them cover the same subjects.

Calgary is a progressive city, claiming a population of 35,000, and last year its building returns totaled to $2,420,452.

COMING CONVENTIONS.

Several Canadian plumbing inspectors are expected to attend the coming convention of the Inspectors of Plumbing and Sanitary Engineers, at Trenton, N.J., January 20, 21 and 22, 1910.

The opening session will be held on Thursday, Jan. 20, the chief feature being a lantern slide exhibition of details of the manufacture of pottery by E. C. Strover, assistant general manager of the Trenton Potteries Co. On Friday several important addresses and discussions are to take place and a visit paid to the various potteries. Saturday's programme includes similar features and the annual banquet. Special railway rates are obtainable on the convention certificate plan. A new feature is the arrangement for manufacturers' exhibits.

Charles B. Ball, sanitary engineer, Chicago, president of the society, advises the editor of The Plumber and Steamfitter that next year's convention will probably be held at Detroit or some border city convenient for Canadian delegates.

On January 18, 19 and 20, 1910, the sixteenth annual meeting of the American Society of Heating and Ventilating Engineers, will be held in Engineering Societies building, 29 West 39th Street, New York City.

A PROVINCIAL PLUMBING BY-LAW.

Alberta is to have a plumbing by-law controlling plumbing throughout that province, the work of preparation being in the hands of J. R. Huntbach, Edmonton's progressive plumbing inspector. A new by-law for Edmonton is also under consideration, the old one having been adopted in 1903 and being now out of print.

WILL HAMILTON AND LONDON AWAKEN?

Smith's Falls is the next town considering the advisability of appointing a plumbing inspector and enforcing a plumbing by-law. When a few more of the progressive towns in Ontario step in line with sanitary progress such behind-the-times cities as Hamilton and London may wake up and do likewise. But it's up to the master plumbers in those cities to wind the alarm clock.

A TIP TO MANUFACTURERS.

It would be very convenient to the trade if the manufacturers would put an ad. in the Plumber and Steamfitter so as we could find them. Yours truly,

Hamilton, Ontario. DICKENSON & ALLEN.

The common drinking cup has been banished from all trains, depots and schools in the State of Kansas, by order of the State Board of Health.

OFFICIAL NEWS

N. A. M. P. & S. F. of CANADA

OFFICERS 1909-10

President, Joseph Laurier, Montreal Vice-Pres., G. H. Cooper, Toronto
Treasurer,—H. Mahoney, Guelph. Secretary,—H. W. Munday, Montreal

Provincial Vice Presidents, Nova Scotia, Frank Powers, Lunenburg; New Brunswick, Wm. Watson, Moncton; Quebec, J. E. Walsh, Montreal; Ontario, R. J. Shannon, Toronto; Manitoba, R. L. Beattie, Winnipeg; Alberta and Saskatchewan, E. J. Young, Calgary; British Columbia, John Colbert, Victoria.

Chairmen of Committees,—Legislation, H. A. Knox, Ottawa; Sanitary, P. C. Ogilvie, Montreal; Apprenticeship, J. Griffin, Montreal; Essay, E. Russell, London

Next Convention will be held at Toronto the last week in August, 1910.

AMENDMENTS TO NEW VANCOUVER BY-LAW.

A number of amendments have just been made to the plumbing by-law, published in The Plumber and Steamfitter of Sept. 1, 1909. These came as a result of the united objections to the by-law, which was passed last summer, and which were raised by the city plumbing department and forty-seven plumbing firms. The most important change was that in regard to the smoke test mentioned in clause 8. In the future, this will be applied by the plumber under the inspection of the plumbing inspector, instead of being applied by the latter. Plumbing Inspector Townley complained that with the present force it was impossible to have the inspectors apply the test. He was anxious that the staff should be increased and it is probable that this will be done.

Section 18, re the schedule of pipe to be used, was amended so as to adopt the Toronto schedule of weights, which provides for pipe lighter than that called for here. The plumbers state that to use the present scale, special pipe would have to be made in Vancouver.

The word "diameter" was substituted for "length" in respect to the ferrules mentioned in clause 21. The following was added to clause 22: "and all connections with water pipes with wiped joints or proper slip joint connections." Under the present by-law, all buildings above three storeys in height are required to have branch ventilating pipes of a diameter of at least three inches, but the new regulation is more stringent still, and says that in buildings over six storeys the pipes must be four inches in diameter. The angle of pipes in clause 29 was made three inches in a foot, instead of six inches. There was a change made in the punctuation of clause 45, so as to make the word "enamelled" apply to cast iron traps. "Waste pipes" was added to the vent pipes in clause 47. The last sentence in clause 48 was stricken out and re-written, as clause 48A, with the word "lead" inserted before "water closet bend." Clause 51 was amended by the addition of the words "cast iron" before "soil pipes" in each of the three sentences, and it was provided that exterior pipes should be oiled. Clause 51A was added. It provides that water closets and urinals shall not be placed in sleeping apartments, nor in any room which has not direct communication with the external air.

Inspector Townley recommended the passage of a by-law to cover basement drain connections, and he and the city engineer were empowered to draft a by-law and lay it before the Board of Works.

Representatives of the Dominion Glazed Cement Company asked that the plumbing by-law mention cement pipe as being suitable for use. The committee was rather inclined to doubt the suitability of this material for sewerage purposes, but left the matter over to the city engineer for a report, which will be presented to the Board of Works.

Five thousand cats have been shipped from Chicago to Japan for the purpose of fighting plague-infected rats.

How the Plumber May Create New Business

Written for The Plumber and Steamfitter by Charles H. Denison.

Suggestions Whereby the Plumber and Steamfitter Should Increase His Returns —Collect Oustanding Accounts; Dig Up New Work; Handle and Push Gas, Bathroom and General Plumbing Specialties—Look After the Farmers' Needs— Advertise and Have Clean, Bright Show Windows Regularly Changed.

The business is there all right; anywhere, everywhere, but the average master plumber and fitter is merely looking for it with leather spectacles on and perhaps praying that the job will hit the other fellow first. He don't want the work unless it stacks up exactly to suit his taste.

You have all listened to that pretty little ballad, which so touchingly describes "John D.," who started with nothing and to-day has a mortgage on a goodly portion of the earth. Here are the lines; paste them in your hat and reflect occasionally:

"Every little bit, added to what you've got, makes just a little bit more."

If many a plumber and fitter would [illegible] embodied in these two little lines of "josh," and act on the same, the craft would go ahead by leaps and bounds and everybody would have a little money at the end of the year.

Plumbers Should Collect Accounts.

Now I am going to make a few remarks which I hope will be taken in the right spirit, for they are intended for the best interest of all. The average master plumber and fitter is a mighty clever man in many respects; free-hearted, a hard worker and generous to a fault. Why, if banks did business in the easy manner of our craft, they would go broke in six months' time; or, to turn the statement around, if the plumber would collect his accounts and cease "throwing off" a few dollars here and there, he would be in prosperous circumstances in a few years.

I said that the master plumber was a fine fellow in many respects. He is, but he is a mighty poor salesman; and, further, he does not know how to get down and make business. At this stage of the game he sure is stalled for fair and needs to throw sand on the rails in order to get a grip and forge ahead. [illegible] six months' work constitutes the amount in the average shop. [illegible] other lines of business are [illegible] from one quarter to one half of the year? Why should this be so with re[illegible]? The answer is—the ignorance or want of energy upon the part of the master plumber. You take it from your truly, that the master plumber is actually ashamed to get out and hustle for any other kind of work than that which strictly pertains to the craft for generations back; and some are so bashful or bull-headed that they prefer to sit in the shop and let the blue prints come to them. This is not a guess; it is plain facts of the case, although it may not be true of the town of some particular individual who will read this article.

Branch Out Into Kindred Lines.

I do not make the statement that any master plumber can keep busy, "full up," for twelve months in the year, but I do say that he can cut down a large percentage of the three or six months' idle time by devoting his spare moments to building up his business by branching out into other lines which are closely connected with the craft, and in order to show that all this is not mere talk I will mention several.

When the plumber has sold the tub, closet, lavatory, sink and range boiler, he generally stops, content with that and the work of putting in the job. Say! he has only made a beginning and there are many other articles that he could work off while the buying spell was on the customer. Take the bath tub for instance. What is the matter with selling a bath tub seat, a shower bath appliance; the lavatory needs some patent soap dishes and perchance a plate glass mirror, while with the kitchen sink there are a dozen appliances which might be sold.

The range boiler can be supplied with a gas appliance of some kind for the purpose of heating the water cheaply and quickly in the summer time. Now when we come to the steam or hot water heating apparatus there are many specialties such as foot rests for the radiators, radiator shields and heating regulators. Do you suppose that any customer would get away from the counter of a store without buying some of these articles, provided the salesman was on to his job? And if he missed these chances it is a safe bet that he would not hold his place very long.

Sell Gas and Plumbing Sepecialties.

Now the list of specialties is not yet completed. There are many gas appliances which the shop could sell at a good profit. There are water lifts, vacuum cleaning outfits, sewage disposal outfits. If one will take almost any trade newspaper which applies to our craft and scan its advertising pages it will be found that a list of from twenty-five to fifty or more articles can be made which will sell, and sell at a good profit, provided one has nerve enough to push the specialty. But, as stated previously, the master plumber seems to be afraid to get out of the rut and make an effort along other lines, considering it beneath his dignity to go after trade along the salesmanship line and he also is too proud, many times, to learn. Not all, but many are so constituted. We have not sprung the entire proposition yet.

Here are at least two more sources of trade that are not worked to the extent which they should be. First: How many shops have a list of parties in their town who could afford to have a steam or hot water heating plant or bathroom outfit, and are not supplied? If one takes a day off and makes such a list of people in a town of say three thousand, that master plumber is going to be surprised at the number of names he will find on the list. Now I will admit that many of the parties are tough customers to tackle and the chances are that they have been approached before upon the subject. So much the better. They will require less educating, and anyway a tough customer sharpens up one's wits. It gives any one pleasure to conquor their objections and besides you might as well be talking to them as loafing around the shop doing nothing. Far better, for there is a chance to land some business; and land it you will, if you only dig hard enough and keep at it.

Look After Farmers' Trade.

Suppose you worked a whole month and only secured one heating job? Would that not be better than to be idle for 30 days, expenses going on meanwhile?

The other source for more business is the trade of the farmer. This is almost entirely neglected by many shops who consider the farmer a dead one anyway, and these master plumbers will not take the trouble to go after this rural individual. During the past decade, for

an average class, the farmer has probably bettered his circumstances to a greater extent than any other class, and they are both willing and able to fit out their homes with plumbing and heating outfits, provided they are educated to it. The use of compressed air with the tank in the cellar appeals strongly to the farmer. Hundreds of them do not know that although they may be twenty miles from a water main they may have as complete an outfit as exists in the city mansion. Why not tell them and try to secure a part of this business which merely needs working in order to bring a good profit to the shop? The farmer, also, let me remark, is a cash customer in four cases out of five, and is somewhat easier satisfied than the town individual.

Now as far as any particular season obtains for installing new work, it is all a matter of education. I know full well that the spring and summer months, in many places, are considered mighty slow but it is because everybody keeps putting the work off until fall, and then for about four or five months the plumber or fitter is kept on the keen jump to do his work. This is a matter of education as previously remarked, and many customers will be found reasonable if it be shown that it is for their interest to have the work done at once. Having been throught the mill, I know how people act in this respect, but I found that out of a dozen possible customers, there was always two or three who could be persuaded to have the work done early and I made it a point to land those particular parties and get the work completed.

Be Persistent in Advertising.

There is yet another point to be mentioned and that is advertising. As an advertiser, the plumbing shop is not of very much profit to the newspaper. The plumber seems to prefer to let the "mail order" houses occupy space in the papers rather than take any for himself. Also many of the show windows in plumbing shops are far from being things of beauty. Some plumbers do not believe in newspaper advertising. This is because they do not understand how to do it and also because they fail to follow it up, merely starting and keeping at it for a short time and then quitting just as, or before, the benefits begin to develop.

Certain parties who have tried advertising in an intelligent manner and followed it up have found that their business for the year increased anywhere from 20 per cent. to 35 per cent. in towns where there was strong opposition and if it succeeds in one place there is no reasonable doubt why it should not work well in other towns. Convince the people that you are established in business and are there to stay; that you handle only first class goods and many specialties of merit; and that the work turned out by your shop is as nearly perfect as can be done. Preach the doctrine that it is not necessary to send out of town in order to get plumbing goods, and if any one buys of a mail order house, let that party find the plumber to put in the work.

Look Well to Window Displays.

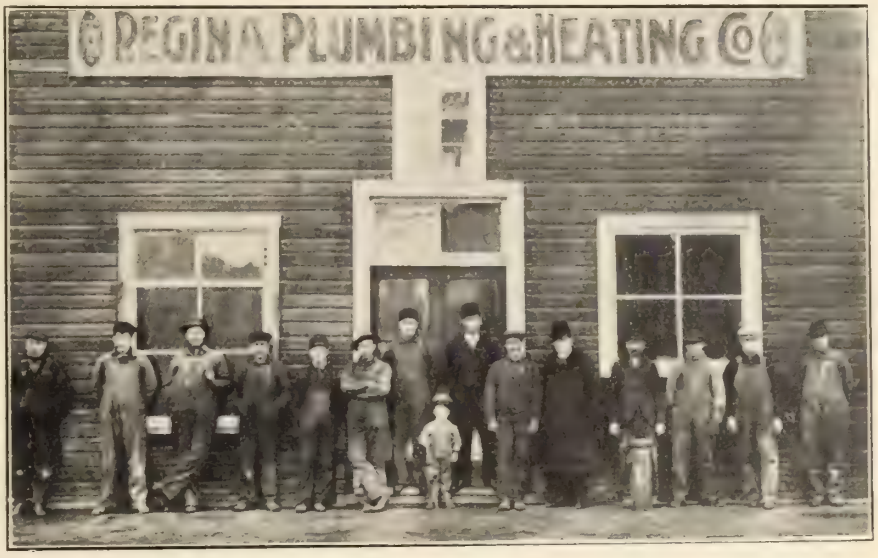
Have the show window dressed out in an attractive manner with a few first-class plumbing and heating fixtures and sandwich in a reasonable display of specialties. Change the arrangement of the show window once a month and above all, see to it that the window and the articles in it are clean. I have seen display windows in plumbing shops that were full of dead flies from year to year, and the dust in the window was nearly deep enough to raise a crop of onions, yet these same master plumbers were content to do business and put up such a front in advertising their business. A window in a plumbing shop, properly dressed out, can be seen from a distance of at least a block, and the plumber who neglects to keep it in order, turns down one of the best drawing cards in the bunch. Follow up with vigor some of the hints given in this article during 1910, then balance your books at the end of the year and write the editor of this paper how the matter panned out. Dig into these fields and land extra work for your shop. Endeavor to become a salesman.

ENTERPRISING REGINA FIRM.

One of the thriving and up-to-date business concerns of Saskatchewan's capital city is the Regina Plumbing & Heating Co., a photograph of the present staff of which is shown herewith. R. H. Read is the manager of the concern, and his small son, Master J. Read, who also appears in the picture, is the mascot of the company, and a coming plumber.

The company's range of work extends through the Province of Saskatchewan and into the sister Province of Alberta, and it is all the time breaking into new fields of activity. Large as the staff is at present it will be considerably increased in the coming spring when active building operations will be resumed.

Among other notable jobs carried to a successful issue by the company are the following:—Hot water heating of the Maple Creek Post Office, the steam heating and plumbing of the Lands Titles Office, Saskatoon; the Canada Permanent building and the Heintzman block, Regina; two other big jobs will be completed in the spring, viz.: the new Collegiate Institute, Saskatoon, and the International Harvester building, Calgary. All of the contracts enumerated above call for first-class work and lots of it, and in addition the company have men constantly employed on numerous smaller jobs.



Staff of the Regina Plumbing & Heating Co. and Their Juvenile Mascot.

Under the management of Mr. Read, with a loyal corps of helpers assisting, this concern should continue to grow, and be one of the most important in its line in the west.

Tests of a filtration plant similar in principle to the one that is being installed for Toronto at the Island, have been carried on by the Ontario Provincial Board of Health Department in Stanley Park for some months past. These tests are said to have proved exceedingly satisfactory.

Report of Bacteria in the Air of Drains and Sewers

The Sanitary Significance of the Presence of Bacteria Dealt With by C. E. A. Winslow, of the Massachusetts Institute of Technology, in the Report of the Sanitary Committee of the National Association of Master Plumbers of the United States.

The idea of the connection between sewer gas and disease dates back to the days when the cause of the infectious maladies was still unknown. Mysterious miasmatic influences were naturally enough supposed to accompany the foul odors of decomposing organic matter. When it was proved that the contagious and infectious diseases are due to the presence of microscopic plant and animal parisites, the case against sewer gas seemed less convincing.

Nageli and many other bacteriologists showed that under ordinary conditions germs adhere strongly to moist surfaces and are not easily given off from liquids into the adjacent air. Sir Edward Frankland in England and Raphael Pumpelly in this country carried out experiments which indicated that chemicals in solution, and bacteria in suspension, might be thrown into the air from liquids by the bursting of bubbles. On this contingency the possible danger of sewer gas infection still might rest.

Some European Investigations.

Actual examinations of the air in sewers, however, by Miquel in France, Petri in Germany and Carnelly and Haldane, Robertson and Laws and Andrewes in England showed that sewer air as a matter of fact contains very small numbers of bacteria and those of types common in street air rather than in sewage. Uffelmann found the same condition in the air of a house drainage system. Carnelley and Haldane and Laws and Andrewes isolated sewage bacteria in the immediate vicinity of points where active splashing occurred. As in the experimental studies of Frankland, Pumpelly and Dr. Abbott, of Philadelphia, there was clearly a possibility of air infection where spray was produced by some mechanical method. On the whole, however, the air of drains and sewers seemed to be of high bacterial purity and all the observers who studied normal conditions in actual sewers concluded that the danger of bacterial infection from sewer air was remote.

These results, with the absence of any reliable evidence from the study of epidemics in favor of the transmission of germs by sewer air, have led sanitarians in Germany and the United States to agree with practical unanimity that the danger of such transmission may be disregarded. In England, on the other hand, a large number, probably a majority, of sanitary experts have failed to be convinced, and have clung to the opinion that under some conditions the carriage of disease bacteria by sewer air is a practical possibility.

A little over a year ago at the request of the National Association of Master Plumbers, I made some experiments on this problem, upon which no practical investigations had been conducted for over ten years. I used an experimental stack of 4-inch soil pipe, 15 feet in height, with a running trap at the bottom and an exhaust fan, for drawing up a strong current of air, at the top. Sewage was placed in the trap, sealing it partially or completely, or resting in the bottom without sealing it. Air was drawn over the sewage and wetted surfaces of the pipe or was bubbled through the sealed trap and the air was examined at various points in the stack above. When the air current was strong, an increase was noted in the bacterial content of the pipe air; but the increase was not striking even at high velocities and was entirely wanting with air currents of less extreme force. Only three of the characteristic bacteria of sewage were isolated from the air in the whole series of experiments. As a result of this investigation I reported that the danger of bacterial infection from drain air was but slight.

Conclusions of English Students.

At about the same time a series of experiments on sewer air was reported to the Royal Society of London by Major W. H. Horrocks of the English Army Medical Corps. His results seemed at first sight to warrant widely different conclusions from those drawn by other observers; and it seemed necessary to re-examinine the whole question with the greatest care.

Major Horrocks' general method consisted in the artificial infection of the lower part of natural and experimental drainage systems with a peculiar bacterium, the Bacillus prodigiosus, which is not normally found in the air. He then exposed small open dishes of nutritive media (Petri plates) in the upper part of the systems. Germs carried up in the air fell on the plates, grew and developed into visible colonies, and among these colonies he identified the particular form B. prodigiosus, introduced in the liquid at the bottom. By this process he detected his test organism in a pipe 9 feet above an experimental running trap into which it had been introduced, and in the air of a catch basin of the town into which he had poured it. Similar results were obtained when the lower sections of his experimental pipe system were wetted with a culture of the B. prodigiosus and then dried. The dried germs were apparently detached, carried up by the air and deposited on the plates. In another series of experiments sewage, infected with the typhoid bacillus or with B. prodigiosus, was allowed to to flow, quietly and without splashing, through a horizontal pipe to which a vertical pipe was connected at an intermediate point. Plates exposed in the vertical pipe showed colonies of the specific bacteria introduced below, even at a height of 11 feet 9 inches above the liquid. Again, emulsions of B. prodigiosus were flushed from the closets of drainage systems in actual use and the germs thus introduced were found in all parts of the systems in open connection therewith, even at a height of 50 feet above the traps. Major Horrocks, by the same method of exposing Petri plates, found Bacillus coli, the characteristic organism of sewage, in a house drain and in the main sewer of the town. Finally, he suspended the feces of a typhoid patient in water and passed them through a half-S-trap and found the typhoid organism on plates in a vertical pipe above at a height of 3½ feet above the liquid.

Major Horrocks' report, and a still more recent series of confirmatory experiments by Dr. F. W. Andrewes, of London, naturally excited the deepest interest among sanitarians. In many quarters the old suspicions of sewer air were revived in almost their full force.

British Doctors Unconvinced.

The Journal of the American Medical Association, for example, said, in commenting upon Horrocks' work: "We may still have to look to sewer emanations as the occasional cause of mysterious out-breaks of disease." Other sanitarians maintained a more conservative attitude, and waited further evidence before abandoning their previous conclusions.

The matter stood about as follows: On the one hand Horrocks had shown that specific bacteria, present in traps and drains, could get into the air above by splashing, by the bursting of bubbles and even in some experiments from the surface of liquids apparently in quiet motion; he detected such bacteria by the plate method in the air of ventilating pipes at considerable distances (once at 50 feet) above the infected liquid. On the other hand, Miquel, Petri, Uffelmann, Carnelly and Haldane, Laws and Andrewes and others had shown that the number of bacteria actually present in the air of sewers and house drains is extremely small and that those present are generally air forms and not sewage forms. Furthermore, reliable evidence of the spread of infectious disease by sewer air is wholly lacking. The inconsistency of the two sorts of evidence required explanation; and, after presenting the facts to the Sanitary Committee of the National Association of Master Plumbers, I was commissioned by them to attempt the clearing up of the apparent contradiction.

Results of Boston Tests.

I first attempted to repeat as closely as possible one of Horrocks' simpler experiments. I examined the air of a boat chamber on one of the main sewers of the city of Boston, as Horrocks had done in the sewers of Gibraltar. I found colon bacilli, the characteristic sewage organism, on my plates in many experiments; but their number was least nearest the sewage, greater nearer the street, and greatest in the street air itself. It was clear that they came from street dust infected by horse dung, etc., and not from the sewage at all. I then constructed an experimental pipe system, such as Horrocks used, consisting of a half-S trap of 6-inch tile drain to which an 8-foot vertical stack of the same pipe was connected. A rich emulsion of B. prodigiosus culture, or of B. coli culture, in soapy water was poured through the trap and Petri dishes of nutrient gelatine or agar were suspended at various points in the pipe above. Control plates were also exposed at various points in the laboratory outside. Six out of 28 plates exposed in the pipe over the B. coli emulsion showed colonies of this germ, 14 colonies in all. Eight out of 24 plates exposed in the pipe over liquid infected with B. prodigiosus showed this organism, 17 colonies in all. The general effect of these experiments was therefore to confirm the results of Major Horrocks. My tests, like his, showed that specific bacteria are discharged into the air from the surface of foaming infected liquids and may be carried up in connecting pipes considerable distances. Furthermore, I found that the velocity of an air current capable of transporting bacteria in the form in which they are sprayed into the air from an atomizer is very low indeed.

Granting, them, that infection of the air above sewage may take place, how can the results of actual examinations of sewer air be explained? The idea suggested itself at once that the whole question might be a quantitative one. It might be possible that under extreme conditions that it does not appreciably affect the composition of the air of the sewer as a whole.

New Method of Study.

I next therefore attempted to investigate the question from this standpoint; and made first a careful examination of the best available quantitative methods. Horrocks' procedure of exposing open dishes of nutrient media to the air is of course not quantitative at all, since the bacteria which happen to fall on the plate are not related to any particular volume of air. The method adopted by most recent observers, and the one which I used in the experiments reported a year ago, involves the straining out of the bacteria in a measured volume of air by drawing it through a sand filter. The bacteria are then washed out from the sand in sterile water and enumerated by the ordinary cultivation methods. During my work this year I developed a new method in which a measured volume of air is drawn into two large culture bottles and the bacteria are allowed to settle out and form colonies on nutrient media in the bottom of the bottles. This method, although cumbrous, avoids all danger of losing bacteria by drawing them through the sand and was used in all my later work. A careful series of comparative tests showed, however, that the sand method used in other investigations is essentially accurate and earlier results may be accepted as correct in their general conclusions.

By the use of the Culture Bottle Method I next attempted to control Major Horrock's results from the quantitive standpoint. I prepared a rich emulsion of B. prodigiosus, containing hundreds of millions of bacteria per liter, made it foam freely by beating it up with soap, and poured it into a large glass bottle or into an open dish. The air in the bottle, or the air of the laboratory over the open dish, was examined by the culture bottle method. Out of 30 liters of air examined, 5 only contained B. prodigiosus. In one liter, three were found, and in the other four liters, one each, clearly the bacterial infection of the air produced by very vigorous foaming was but slight.

In these experiments there was but little splashing of the infected liquids; the bursting of bubbles from the foaming surface was the only source of air infection. I next imitated natural conditions more closely. Through the kindness of David Craig, of the Sanitary Committee of the Master Plumbers' Association, I had an ordinary porcelain water-closet bowl set directly on a 4-inch cast iron S-trap, having a clean-out hole at its crown. The S-trap was connected at its lower end with an ordinary 4-inch running trap. A rich, soapy emulsion of B. prodigiosus was poured rapidly into the water-closet bowl so as to rush down through the two traps, foaming and splashing as it went. Samples of air were collected from the clean-out at the crown of the upper trap and from the upper opening of the lower running trap, a few inches only from the foaming surface of the liquid. Everything was as favorable as possible for the discharge of bacteria into the air. Yet, out of 44 liters of air examined, 43 contained no B. prodigiosus. One liter showed a group of eleven colonies apparently derived from a single infected droplet. It must be remembered that in these experiments, I used liquids artificially infected with large numbers of specific bacteria and caused to foam artificially by beating them up with a considerable addition of soap. Vigorous splashing was added to foaming in the last series of tests. Under these extreme conditions, as in Major Horrocks' experiments, the specific bacteria present could be detected in the air; yet the actual number present even here was extremely small.

These experiments seemed to offer a reasonable explanation of the difference between Major Horrocks' results and those of other observers. Bacterial infection of the air from foaming liquids may take place. Horrocks, using for the most part artificially prepared emulsions and ignoring the quantitative aspect of the case, naturally obtained positive results. When the question is approached numerically, however, the amount of air infection, even under extreme conditions, is so slight that one would scarcely expect the general air of sewers and house drains to be appreciably affected under normal conditions are very nearly normal.

Experiments in Many Places.

The final test of experimental conclusions of this sort must always be made by an appeal to existing conditions under normal circumstances of actual use. The numerous investigations cited above have shown that the air of street sewers is indeed singularly free from bacteria. The air of house drainage systems might, however, be supposed to be worse than than of the street sewers; and with re-

gard to their bacterial condition only the single report of Uffelmann appears to be available. As a crucial test, I therefore, determined to carry out a sufficient number of examinations of house drain air to gain a fair idea of its bacterial composition. With the cordial co-operation of Mr. Craig, I have been able to complete this work and to obtain results which seem to be conslusive.

I studied 19 different plumbing systems, 5 in buildings of the Massachusetts Institute of Technology, 4 in the wards of the Boston City Hospital, 3 in a block of East Boston tenements, 2 at the Boston City Hall, 2 at the Hotel Lenox and 1 each in the Ames Building, in the Technology Club, and in a private residence on Newburry street. The plumbing pipes were tapped at various representative points, on the main stack in the lower part of the building, on the projection of the main stack above the roof, on cleanouts on the main house drain, on wastes from fixtures and dead ends in connection with the house drain, and in one case on the ventilation system at some distance from the main stack. From each of 20 points selected, 10 liters of air were drawn off and examined for the characteristic bacteria of sewage, the colon bacillus and the sewage streptococcus.

No Sewage Bacteria in Air.

In all, 200 liter samples of air were examined. Three samples were lost from the fact that the liquid sewage in the plumbing pipe ran into the collecting tube and over into the culture bottle, directly contaminating it with liquid. There remained then 197 tests. Of these 193 showed no sewage bacteria present. In the remaining four cases, sewage organisms were found, the colon bacillus three times and the streptococcus once. In each one of these four cases there was a discharge of sewage in the pipe at the point of examination, and at the moment the sample was taken, so that spray was actually splashing in the air. In each of the four cases a sample of air from the same point ten minutes later showed no sewage forms present. In not a single case out of the 200 were sewage bacteria present in a liter of house drain air unless there was mechanical splashing at the point, and at the moment, of examination.

In general my results confirm the results of Horrocks' in so far as they show that specific bacteria may be ejected from liquids into the air above. My tests of house drain air, like those of Uffelmann and Haldane and Laws and Andrewes on sewer air, indicate that mechanical splashing may produce a local infection of the air in immediate contact with the spray. Such an infection does not, however, extend for any distance or persist for more than a minute or so. I found the general air of house drainage systems singularly free from bacterial life. Out of 200 liters examined, only 48 contained any organisms capable of development at 37 degrees. Sewage bacteria were found in the air of the house drains only four times out of 200 liters, and then in the presence of mechanical spraying of sewage at the point of collection. The general air of the house drainage system, aside from this local infection, was, as far as examined, free from sewage organisms. These results accord well with those obtained by Miquel, Petri, Carnelly and Haldane and Laws and Andrewes in street sewers, and with those reported by Uffelmann for drain air.

The experiments of Major Horrocks, rightly interpreted, in no way contradict this general consensus of opinion. He demonstrated a possibility by using, for the most part, artificially infected, and foaming emulsions, and by ignoring all quantitative considerations. We must deal, however, in sanitation, not with theoretical possibilities, but with probabilities measured as closely as possible in regard to their practical importance. I have found in my experiments that even under the most extreme conditions the number of bacteria which get into the air from an infected liquid is small. I have found by the examination of a series of plumbing systems in actual use that intestinal bacteria could only be isolated four times out of 200 liters, and then only at points of direct local infection from splashing.

Water More Dangerous Than Air.

In a surface water of good quality, like that of New York City, the colon bacillus can almost invariably be isolated from 10 cubic centimeters. This means a slight degree of intestinal pollution, but experience has shown that the chance of infection from such water is but slight; and we drink it without serious alarm. If one were to breathe for 24 hours the undiluted air of a house drainage system at any point not immediately infected by mechanical splashing, it appears that less than 50 intestinal bacteria would be taken in, for the daily consumption of air is about 10,000 liters, and in 200 liters I obtained negative results from air of this sort. In drinking New York water, twice as many colon bacilli are ingested every day, for 1,000 cubic centimeters is a small amount for daily consumption. So there would be less danger of contracting disease from continually breathing the air of a vent pipe, or of a soil pipe, except where liquid is actually splashing, than from drinking New York water.

There is a possibility, of course, that the gaseous emanations from decomposing organic matter may exert a predisposing influence which makes the body succumb more easily to specific germs, introduced in other ways. Many have held that in this way sewer gas might indirectly promote disease. This view, supported mainly by the experiments of Alessi, well deserves further study; but I have not dealt with it in the present investigation. I believe, however, that my results, in the light of all previous evidence, warrant the conclusion that the chance of direct bacterial infection through the air of drains and sewers is so slight as to be practcally negligible.

WROUGHT IRON AND STEEL.

A writer in the Brass World gives the following formula for a solution for making an acid test to distinguish wrought iron from steel: water, 9 parts; sulphuric acid, 3 parts; muriatic acid, 1 part. These acids are poured into the water and allowed to cool in a glass or porcelain dish. The test is made by immersing the samples in the solution for 15 or 20 minutes. After being rinsed and dried, the specimens, if iron, will show a series of fibres, with the slag interspersed between the fibres. Soft steel dissolves uniformly and without the fibrous structure found in wrought iron.

Commenting on this kind of a test, T. N. Thomson, principal of the School of Sanitary Engineering at the International Correspondence Schools, Scranton, Pa., says this shows that the corrosion of steel is different from the corrosion of wrought iron, the steel being uniform and smooth as compared with the jagged, fibrous character of the wrought iron corrosion. It also shows the reason why a piece of steel pipe should last longer than a piece of wrought iron pipe. The difference, however, in favor of the steel—as far as corrosion by that process was concerned—was so slight that good steel pipe can be considered to be at least equal to modern wrought-iron pipe in durability.

Recent Montreal building permits include: A. Viens, four houses, $10,000; A. Rivest, four houses, $9,000; and six houses, $15,000; the Church Home, one dwelling, $12,000; J. E. Birks, house, $7,500; A. Tremblay, two houses, $4,500; F. A. Guay, house, $2,500; D. McNeice, house, $3,000; H. A. Brodeur, repairs to dwelling, $3,500; A. Ineson, house, Rosemount, $2,000; O. Thibault, house, $2,000; A. Auger, house, Rosemount, $2,000.

Examples of Wind Effects on Ventilation

Address by W. H. Whitten, Delivered Before the Indianapolis Convention of the American Society of Heating and Ventilating Engineers.

The effects of wind blowing against a building are manifold. The most apparent effect is the inleakage of air through crevices, particularly those about the movable windows and doors. In cold weather this inleakage becomes sensible or evident in the form of cold draughts which are often noticeable at a distance from the walls toward the interior.

The volume of this inleakage varies in proportion to the velocity of the wind, sizes of crevices, and means of egress of air from the building. It is also affected in a small degree by the pressure exerted by the expanded warmed air inside of the building. This pressure must be overcome before the outside air can enter. During the heating season this inleaking air, being of a lower temperature than at which the air inside is desired to be, must be heated.

Both these phenomena are apparent and their effects are common knowledge. Recent investigations have shown, however, that the variation in the volume of inleakage, due to variation of wind velocity, is much greater than was generally believed.

The Escape of Warm Air.

The least apparent effect, and, in the writer's opinion the most important, is the out-flow of warmed air through crevices in the sheltered sides of buildings.

Windows and doors are constructed with the primary object of excluding draughts from outside, but are not so well adapted to prevent air currents escaping from the inside.

The wind strikes an obstruction, is diverted from its natural course and is forced to pass by and over the obstruction. In doing this its speed is accelerated, the parted currents uniting at some distance beyond the building, resuming their normal velocity.

This action produces an area of low pressure in the lee of the building which acts as a partial vacuum. This partial vacuum acts as a continuous pump on the crevices in the lee sides. As the pressure of the inside warm air is naturally outward, the combination of this pressure with the partial vacuum outside produces a greater loss than is sustained on account of inleakage, i.e., assuming aggregate amount of crevice on each side to be equal. This loss is greatly increased when other means than wall crevices are employed to admit outer air, such as cold air inlets for hot air furnaces, supply inlets for indirect or fan systems, etc.

It has been well said by a writer on this subject that "we are prone to notice only that which is evident to the senses." This outward flow of air is not attended by disagreeable draughts and, unless special means are taken to detect it, is not evident to the senses.

Tests on a School Building.

A few typical tests made by the writer and others the past winter in this connection should be of interest.

Given a school building, rectangular in shape, ends of building facing north and south, having stairway windows only in these ends ; east and west sides divided into school rooms, each having 5 windows 5 feet wide by 9 feet high, window sills on a level with tops of pupils' heads when seated. Windows having usual clearance. Rooms heated by a fan system designed to supply 1,800 cubic feet of air per hour per pupil, with inlet velocity of 750 feet per minute. Wind north-west, velocity 14.5 to 15 miles per hour, outside temperature 33 degrees. Room No. 5 situated on the east side of first floor building, one room removed from south end, showed an average rate of supply velocity of 817 feet per minute and a vent velocity of 340 feet per minute. Inlet and outlet of same size. Inlet 8 feet above floor, outlet at floor and both on opposite side of room from windows. This showed a loss of 457 feet per minute. An air test of this room showed 10 parts of Carbon Dioxide in 10,000. This loss was practically all above the breathing line and frequent complaints of headaches among scholars occurred. Other rooms on the east side of building showed as follows :

	Rate of supply.	Rate of vent.
1st floor, Room No. 3	760	410
1st floor, Room No. 6.....	753	396
2d floor, Room No. 13.....	690	315
West side :		
1st floor, Room No. 7 (partly sheltered)	660	700
2d floor, Room No. 14 (exposed to strongest wind effect)	410	705

Temperature Control in Use.

Average temperature East rooms at the breathing level ....73 dr.; at floor 70dr.

Ave. temperate West rooms, breathing level ...68 dr.; at floor 58 dr.

A test of another school building with wind at 18 miles per hour and outside temperature 30 degrees, building heated and ventilated by gravity indirect system, showed an average of 20 per cent. loss from the supply ducts in rooms on the windward side and an addition of 60 per cent. to the vent velocity. Rooms on the leeward side of the building showed an addition of 30 per cent. to the supply velocity and a reduction of 62 per cent. of the vent velocity.

Results of Other Tests.

A school building having a few corridor windows on the north side, and school room windows on the east, south and west was tested with typical results, as follows: Wind, 20 miles per hour, direction northwest. Room No. 26 on east side of building, two movable windows, 7 feet wide by 9 feet high, one tight window 10 feet wide by 9 feet high, sills level with breathing level. Inlet 8 feet from floor, 4 feet from east wall, volume of air supply 2,340 cubic feet per minute, volume of air passing out vent 1,451 cubic feet per minute.

Room No. 28, south side of building, near east end, windows same as No. 26, volume of supply 1,863 cubic feet per minute, volume of air passing vent 1,311 cubic feet per minute.

A test made by A. B. Franklin, of Boston, and the Massachusetts District Police on a school building some years ago is also interesting. Wind, 25 to 30 miles an hour, and blowing toward a majority of windows in the building.

Room No.	Air supply at inlet. cu. ft. per min.	Air removed at outlet. cu. ft. per min.
11 (exposed)	1,533	2,367
12 (exposed)	1,533	2,307
13 (exposed)	1,996	2,838
14 (exposed)	2,244	2,990
15 (partly sheltered	2.200	2,368
16 (partly sheltered	769	805
20 (exposed)	1.694	2,391
21 (partly exposed)	2,517	2,777
22 (partly exposed)	1.609	2,031
23 (partly exposed)	2,253	2,762
24 (partly exposed)	1,389	1,653
25 (party sheltered	2,301	2,288
30 (partly exposed)	1,084	2,394
31 (exposed)	568	1.154
32 (partly sheltered) ..	1.602	1,773
Hall (sheltered)	7,833	5.786
35 (partly sheltered) ...	2,153	2.442
34 (partly sheltered) ...	1,863	2,148
36 (exposed)	933	1,404

A High School building was recently tested by Prof. H. C. Anderson, of Michigan University, there being some question as to whether the heating contractor had put in a competent apparatus (fan system). The supply seemed of sufficient quantity and temperature, but rooms on the exposed sides of the building could not be satisfactorily heated. After shutting down the fan the supply ducts were closed in the rooms on the exposed side of the building and, with all doors and windows closed, it was found that as much air was being removed from the vent ducts as the fan system was supposed to supply. During this test the outside wind was of moderate velocity.

Ventilation System in a Hospital.

The writer recently had occasion to examine the ventilating system of a hospital. The heating season was over and the fan was not in operation. Supply inlets were in inner walls and about 10 feet from floor. Vents were about 12 inches from floor. Outside wind 6 to 7 miles per hour. Anemometer showed no movement of air at inlets. Window crevices showed safe inleakage on exposed side and outleakage on sheltered sides. Vents in rooms on exposed sides showed a normal outflow, but those in rooms on sheltered sides showed a reverse current into the rooms. An examination of the attic (which was quite large) showed that the vent ducts ended at the attic floor and were covered with ½-inch mesh wire screens. There were a few windows in the attic and a ventilator about 4 feet in diameter was placed on the roof. Very little air movement could be detected through the ventilator which was of the ordinary hood type. The vents from rooms on the exposed side showed an upward current into the attic, but those on the leeward side showed a corresponding downward flow. Average velocity in each case was about the same. Odors of drugs could be detected in rooms far remote from where such drugs were used. The wire screens covering attic vents leading to rooms on sheltered side of building were covered with a cobwebby sort of dust, while those covering vents from the opposite side of building were clean.

Tests of several buildings in which the leakage about outer openings had been standardized by means of a metal expansion joint showed an average difference between supply and vent flow of 12 to 15 per cent., the greater part of this being due to difference in temperature of air at these points.

Should Set a Standard for Plumbing Material

Practical Suggestions Made by E. Willard, Kokomo, Indiana, at the Last Convention of the American Society of Plumbing Inspectors and Sanitary Engineers.

We are living in an era of improvement, which, in our own particular line of industry and trade, were we to retrospect for a few years, would cause us to marvel at its development.

This development, however, has been but the answer to necessity, keeping apace with other building lines which have shown decided improvement along conventional ideas having for their foundation material and labor generally understood by the laymen at large, who have been able to cope with its development and who are to-day conversant to a surprising extent upon its detail. I am now referring to carpentry and masonry.

Has the plumber and all their allied interests been benefited by the mystery that has always shrouded plumbing? As a salesman calling on architects, an interested party in a concern manufacturing plumbing material and a bearer of that indelible stamp, "plumber," of which I am proud, I say, "No."

How often Mr. Architect has been referred to as being dependent on such and such a plumber for his plumbing knowledge. And the manufacturer, who, until the last two or three years, has been compelled (through sentiment) to introduce his wares to the public at large through the plumber. The plumber, an individual whose scope of operation is local and of necessity restricted, permits ego to sway his sentiment, which does not generally promote the uplifting and upbuilding of the plumbing business. This statement I make with all due deference and use it not in a comparative sense, but simply to show conditions as I see them.

I make this prophecy, grounded on lines paralleling our own (heating, for illustration) that magazines will continue to increase the planning of advertisements of different lines of material entering into plumbing construction, which to the members of this society, whose combined ability is supreme and unquestioned, may or may not meet with their favor. Hence the necessity of, and the demand for a schedule or code setting forth the standard of all material entering into the plumbing business.

This, on its face, seems an arduous and unsurmountable task, and would be were it to embrace each point of merit claimed by the manufacturer of a certain ware as being better than his competitor's. This, however, is not the intent. By way of illustration and in the form of suggestion, take traps. No greater abuse of the plumbing business has been fostered on the public than the permitting of the plumber to use any style of trap he chose. Hence a code setting forth a certain kind (not "make") would eliminate the practice.

I might go on and take almost any article or articles that are made competitively without a set standard for base that looked all right (their installation permitted) which in a short time develop defects and the public unwaringly permit its practice to continue, not benefited, mind you, from their experience, but simply permit it to go on and on and will continue to do so until a schedule is set forth making compulsory a standard that must be attained and maintained both from a standpoint of efficiency and of durability.

The benefit of such a schedule would be far-reaching in its entirety, benefiting, first, the public; second, the honest manufacturer, compelling the "just as good a one" to be good; and compelling the plumber to conduct his business along the lines of conventionality that would permit him to become a business man unconsciously, removing that stigma "dishonesty," generally coupled with the word "plumbing," in its entirety.

And I would suggest that this society appoint a committee to take this matter up with the manufacturers and jobbers of plumbing material and also the National Association of Architects, and make an effort to create an interest whereby we might have legislation enacted that would give us laws calling for a minimum of standard for all material entering into the construction of sanitary work, thereby enabling the plumbing inspector to have a set of rules to go by that when he went to inspect a job of plumbing, he could not only see that the work was done properly, but that the material used was up to a standard protecting the public, the architect, the manufacturer and jobber.

The David Spencer, Ltd. (departmental store) have purchased the Victoria Times building and the site on which it stands. The company will add it to their block, making extensions and alterations.

THE COMMON DRINKING CUP.

In a number of communities the question of the spreading of contagious diseases through the use of the "common drinking cup" is being discussed by the various health and sanitary authorities. The State board of health of Kansas has, perhaps, gone further into this subject than any other similar body and has recently ruled that the "common drinking cup" must no longer be used in railroad trains and stations, public and private schools and all State educational institutions.

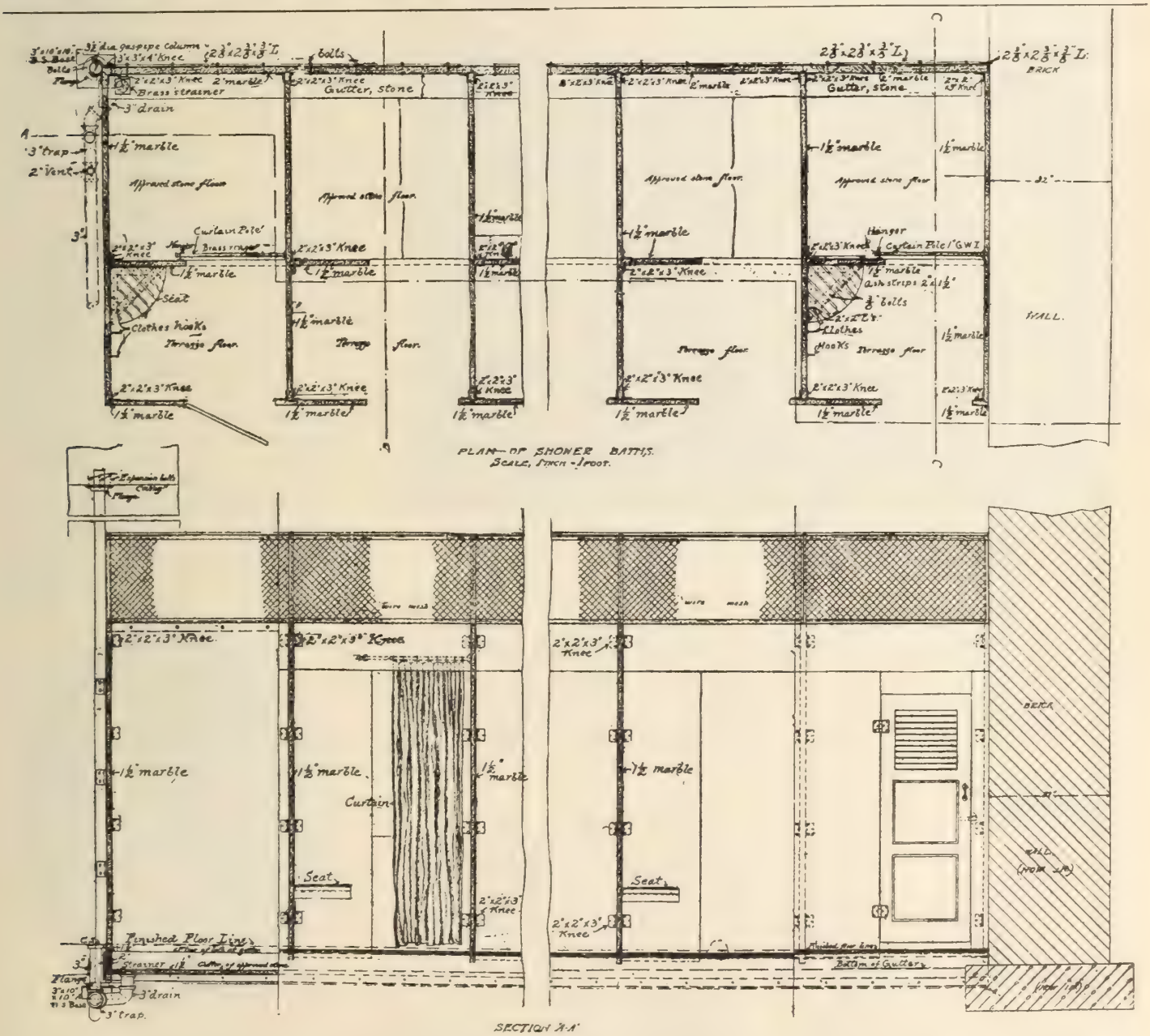
This prohibition has been in force in many districts in other States, but Kansas is the first to make it general. Modern school buildings in nearly all of our large cities are now provided with sanitary drinking fountains equipped with bubbling valves. Some of these valves provide a constant stream, some are regulated by the user. This is certainly an advance over the old method of providing drinking water and the immediate advantage ought to be a decrease in the prevalence of contagious diseases that were undoubtedly spread by the use of the "common drinking cup."

A PLEA FOR HOUSE VENTILATION.

Dr. W. A. Evans. commissioner of the Department of Health of Chicago, gives the following as the causes chiefly responsible for the large number of cases of sickness in the last two months in Chicago.

1. Badly ventilated houses. Bacteria thrive on foul air, dampness and filth. Bad air also lowers the resistance of the body, making it easy prey for disease germs. After the germs have been harbored, allowed to enter the human body and cause disease, we further help them in their work of destruction by acting as distributing agents for them —and that brings us to the second important factor :

2. Association of the sick with the well. The most prominent feature in this connection is the association of the infected with the noninfected in the schoolroom ; particularly is this true of parochial schools, where little attention is paid to the prevalence and spread of contagious diseases. Add to this the constant factors of mild unrecognized cases, concealed cases and nonobservance of quarantine and the present situation is easily explained.



Detail of Shower Baths Designed by the Sanitary Department of the New York City Board of Education, Reproduced From the Engineering Review.

Gossip of the Plumbing and Heating Trade

Items Gathered in all Parts of Canada—Letters Invited From Subscribers, Giving Particulars Regarding Changes in Firm Names, Contracts Secured, Novel Methods of Advertising or Other News—Photos of Anyone or Anything Connected With the Trade Also Welcomed.

Vandry & Matte, plumbers, Quebec, have been registered.

Neville, Tellier & Harris, plumbers, Montreal, have dissolved.

David Rousseau & Fils, tinsmiths, Quebec, have been registered.

W. S. Jury, plumber, Cobalt, was a visitor to Toronto the week after New Year's.

Halifax plumbers report business very active, the cold weather having made a stir in repair work.

Guelph's system of sewage disposal, recently completed, is said to be equal to the best in Ontario.

N. R. Hermiston, of Hermiston & Courie, tinsmiths, Cornwall, has been chosen a councillor for 1910.

A. R. Wilson's plumbing shop at Sherbrooke, Que., was burned early this week. The premises were partly insured.

L. A. Payette, who was sales manager for the Star Iron Company, Montreal, has severed his connection with that firm.

Joseph Leonard, formerly manager of the Crane & Ordway business at Winnipeg, is now representing the Canadian Brass Co., Galt, on the road.

The contract for the plumbing and heating of a residence on Prince Albert Avenue, Westmount, for Geo. Higgins, has also been awarded to John A. Gordon.

The contract for the plumbing and heating of a cottage on McDougall Avenue, Outremont, Que., for John Ash, has been awarded to John A. Gordon, Montreal.

Kingston plumbers are reported to be busy these days. Since the cold snap set in they have been kept on the jump all the time, as quite a number of citizens have found their water pipes frozen.

R. D. Clark & Sons, general contractors for a residence on Wiseman Avenue, Montreal, for R. Roberts, have awarded the contract for plumbing and heating to John A. Gordon, of that city.

At the Smith's Falls council meeting on January 11, Mayor McCallum suggested the passing of a plumbing by-law. Ald. Code gave notice of a by-law to regulate plumbing, and it will come up for discussion at the next meeting of the council.

Harry Munday, Montreal, secretary of the National Association of Master Plumbers, wishes to acknowledge a kind invitation from the Calgary Master Plumbers' Association to a banquet, and regrets that he is unable to accept the hospitality of the association.

D. J. Wallace, who for the past four years has been in the plumbing and heating business in Winnipeg, and who recently established a hardware business in connection, has gone to Ottawa for a few weeks vacation.

For seventeen years Brockville has operated its waterworks system, with returns the past year being the best in its history. The gross revenue, $33,822, is an increase of $2,000 over the preceding year, or $15,200 better than the first year the town assumed control. The gross gain for the year was $7,800.

The tinsmith shop and furnace department of A. E. McKenzie at Moose Jaw, has been sold to Frost Bros., and is now carried on by that firm. Art. Frost is a practical plumber who until recently was in partnership with J. M. Watt; and his brother Fred, who is a practical tinsmith, went out west last fall from Ontario.

Radiators for the Toronto, Dundas and Niagara Falls stations of the Hydro-Electric Commission, now under construction, will be supplied by the Gurney Foundry Co., of Toronto. The contract to supply the radiators for the ten other stations of which the system at present consists, has been awarded to the Taylor-Forbes Co., of Guelph.

The Standard Sanitary Mfg. Co., have during the past week been granted a permit to erect a one-storey factory on the property purchased some little time ago on Royce Avenue, Toronto. This is the first building of the group which will eventually be erected there. It will be 80 x 150 feet in size; will be used as an enameling house, and will cost about $12,000.

W. S. Ramsay, Vancouver, has secured the hot water heating contracts for the Agren and Orita blocks, both of which are large apartment houses in that city, and also the plumbing and hot water heating contract for the Chester block, another large apartment house, in addition to the installation of hot water heating system in several private residences.

Harry Mahoney, Guelph, was re-elected as alderman for the year 1910, with a very handsome vote. In fact, he was fourth on the list, and this year there were only 11 aldermen elected, and it was by general vote, and not by the old ward system, so the Quebec Street plumber well deserves the handshakes and congratulations that are coming his way at present.

George S. Dorman, formerly of St. John, and more recently employed as foreman for Bruce Stewart & Co., of Charlottetown, P.E.I., for the past seven years, has been engaged by Sumner & Co., Moncton, to take charge of their heating and plumbing department. Mr. Dorman comes highly recommended as a heating expert, and he is said to be fully conversant with all its branches of steam and hot water and hot air heating.

Joseph Lafrance, plumbing contractor, Alex. Chagnon, general contractor and L. D. Latour, J. M. Guindon and A. Blondin, all of Montreal, have formed The Lafrance Improved Pipe Joints Co. to manufacture and deal in lead pipe, traps, hot water heaters, furnaces and attachments, and all kinds of plumbers', tinsmiths' and steamfitters' tools and supplies. The company has been incorporated at Ottawa with a capital of $50,000.

The last regular bi-monthly meeting of Halifax 56, U.A. of Plumbers and Steamfitters of America, was devoted to festivities. Donald Cummings, H. W. Munford and others gave short, interesting talks on some of the trade problems encountered daily by the journeymen plumbers and steamfitters, which were much appreciated by those present. After refreshments, a program of music, recitations and phonograph selections was indulged in.

Jas. E. Yates, Brandon, was a caller at the Toronto office of The Plumber & Steamfitter, on Jan. 14, on his return from Mt. Clemens, Mich., where he has been treating a bad attack of rheumatism. Mr. Yates is a keen student of plumbing subjects and took back with him four volumes from the MacLean Publishing Co.'s Technical Book Department. Mr. Yates promises to send an occasional contribution for publication in The Plumber and Steamfitter.

The question of public conveniences will be brought before the Ottawa City council by Ald. Bower. He states that he will move for the appointment of a special committee to report on the matter. His idea is to have a number of conveniences established in various parts of the city, and he proposes that the lavatories should be completely free, suggesting, however, that a charge might be made for soap, towels, etc., in the toilet rooms. Dr. Bower considers Ottawa has reached the size where public conveniences are absolute necessities.

TALES OF THE TRADE

A MANITOBA STORY.

A Toronto heating goods manufacturer who was recently traveling through Manitoba on an automobile, tells a good story on himself. He had stopped at a hotel at Hargrave to make some enquiries and found the landlord and another man sitting side by side on a bench. They were both very old.

"Excuse me," asked the motorist, "but can you tell me how far it is to Brandon?"

The old man jumped up and hobbled to the bar. "Brandy?" he said in a thin quaver. "Yes, indeed, sir; and a very fine brandy it is." He put the bottle and glass before me.

"I asked you, how far it is to Brandon?"

"The best brandy, of course, sir," he answered; "I don't keep nothing but the best."

In despair the tourist turned from this deaf veteran to the other man on the bench.

"Look here, can you tell me how far it is to Brandon?"

The other old man, with a grateful look, rose and limped hastily up to the bar.

"Thanks, sir," he said, "I don't care if I do."

There was nothing to do but buy.

A PLUMBER'S DREAM.

Andy Rodgers, of Rodgers, Gibson & Co., Hamilton, who was elected an alderman in that city for 1910, in the first campaign he participated in, makes the second master plumber in the council, Ald. Norman Clark, having been a member for several years.

Ald. Rodgers is a progressive plumber and an enterprising citizen and he ought to make a good record for himself as a legislator—especially as there is plenty of scope for his work in the "Ambitious City." Andy put up a good fight and worked hard on election day. Then when victory had been grasped he received the congratulations of his friends and went home to have a rest after his strenuous campaign. The reaction, however made his sleep a troubled one, his brain refusing to forget the excitement of the aldermanic fight.

Andy, in his dreams saw himself sitting at the council board awaiting his opportunity to make his maiden effort. Finally his turn came and he arose to the occasion and made a splendid speech in which he depicted Hamilton's backwardness in being almost the only city of size and standing on the American continent without a by-law to regulate plumbing work and provide for a system of inspection and examinations. He pointed out, in his dreamland speech, that Hamilton is a dumping ground for shoddy plumbing materials and the plumbing trade has became so demoralized by the demand for "cheap," instead of "good" work, that they are unable to take the initiative in remedying the deplorable state of affairs which all realize exists. Then he moved for the appointment of a committee to prepare a plumbing code and recommend the name of inspector of plumbing, the stipulation being made that the inspector must be a practical plumber, his duties including membership in the Plumbers' Examining Board, all masters and journeymen having to pass an examination of proficiency before being given a license to do work in the city. Amid loud applause, Ald. Clark seconded Ald. Rodgers' motion, the noise awaking Andy from his slumbers.

The dream had such an impression upon Mr. Rodgers that he forthwith decided to make the dream a fact. Readers of The Plumber and Steamfitter may, therefore, hope to hear of the adoption of a plumbing by-law in Hamilton before 1910 passes into history.

ALD. ANDREW ROGERS.
Elected an alderman in Hamilton for 1910.

JOKE ON WOLVERINE MAN.

One of the transfers made at the first of the year was the change of bosses made by W. H. Darling, formerly with the Dominion Radiator Co., Toronto, and now covering Western Canada, beginning at North Bay, for the Canadian Wolverine Co., Chatham succeeding W. J. Colesworthy.

W. H. Darling, A. S. Lamond and C. H. Bakemeyer, of The Canadian Wolverine Co., Chatham, Ont.

Before leaving the Dominion Radiator Co., the "D.R." boys got together and invited Mr. Darling into the office where, in the presence of the travelers, stenographers, etc., he was presented with a handsome club bag. Called on for a speech, he tried to gain time by opening the bag on a nearby desk, but to his surprise on opening it, a pair of ladies shoes and a lot of confetti fell out. The girls, of course, had lots of fun—and one of them, it is understood, got the shoes. At any rate Darling was too taken back to do more than express his thanks for the present and to deny that he needed the shoes or confetti.

The instigator of the incident is said to be Jimmy Glennister, of London, and the story of where he got the idea is rather interesting. One day last summer Glennister was running in to London from Woodstock, and in his hurry to get home he grabbed the wrong suit case. Mrs. G. discovered the mistake, however, and Jimmy had to make explanations, as the contents were women's wear. Search resulted in the discovery of some letters, but they did not supply the proper clue, but inquiry finally resulted in finding the owner at Windsor, to whom Jimmy delivered the baggage and recovered his own.

But to get back to the Darling end of the story, going to Chatham he arrived in time to participate in the annual meeting of Wolverine salesmen and the banquet at the Hotel Sanita, Chatham, on Jan. 5. The salesmen had an interesting conference with the sales, factory and office staff and were fully posted regarding the new goods to be put on the market this year.

Those present were: President, L. A. Cornelius; Secretary, A. S. Lamond; Superintendent, C. S. Cornelius; J. J. Cornelius, foreman of the shipping department. C. H. Bakemeyer, Ontario salesman; W. H. Darling, Western salesman; F. T. Taylor, foreman nickel plating department; B. Solk, foreman machine shop and J. Zimmer, foreman of the foundry. H. E. Johnston, Quebec and Maritime Provinces salesman for the company, was unable to be present, owing to being ill in Toronto.

In the accompanying illustration Mr. Darling is shown in company with A. S. Lamond and C. H. Bakemeyer.

PIPE DREAM OF THE INVENTOR.

No more I need to shovel coal,
I simply turn the valve around.
And here you are. You'd like an ice?
Oh, we're refrigerated too,
From central plant. 'Tis time to eat?
We set us at the board and press
A button, and there issues forth
From out the wall, all piping hot
A dainty meal. (We lately got
Connected with the Food Depot.)
The coffee tap is at your right.
Some beer? Nay, prithee, trouble not.
'Tis right at hand the spiggot lies.
Nay, start not. That's the Dopesheet News.
Arriving per pneumatic tube—
'Tis handy, but this day 'tis late.
What's that you say? The room is close?
Just turn that faucet next the door.
Now shall you sniff the fresh sea breeze
Imported from Old Orchard Beach?
* * * * * * *
('Twas then that the inventor woke
And found his cigarette was out.)

—Edmonton News.

New Buildings, Water and Sewerage Systems

Opportunities Offered by Municipalities and Private Enterprise for New Plumbing, Heating, Ventilating or Sanitary Systems—Work Being Undertaken in Every Section of the Dominion.

Municipal Undertakings.

Wingham proposes to construct a $6,500 trunk sewer.

Montreal council has been asked to vote $1,000,000 for a filtration plant.

Nanaimo ratepayers will vote on a by-law to raise $100,000 for a sewerage system.

The Works Committee of the Regina city council recommend the spending of $363,000 on a trunk sewer.

Controller Ward proposes to press before the Toronto city council the erection of two more public conveniences, one at Spadina and College, and the other at the western junction of King and Queen streets.

General Building.

A $30,000 hotel will be erected at Brandon.

J. A. Thibodeau is erecting a dwelling, at Ottawa, to cost $5,000.

J. Oliver, Welland, will erect twelve brick houses in Welland this year.

The Claringdon Hotel, Gull Lake, Sask., is to have a new wing built shortly.

The Rumley Co., of Laporte, Ind., will have a large warehouse erected at Saskatoon.

The Star Publishing Co., Toronto, will build a $10,000 addition to its building.

J. W. H. Watts, is having two stores erected at Ottawa, for R. McGiffin, at a cost of $12,000.

The Bell Telephone Co. will erect a new telephone exchange building in the north end of Toronto.

Hobberlin Bros. may erect a large commercial building at Yonge and Richmond Streets, Toronto.

A. T. Leather is to have to business blocks erected, at Macleod. Work to start in early spring.

Col. Sir H. M. Pellatt, Toronto, has taken out a permit for foundation for dwelling to cost $30,000.

Winnipeg building permits include: A. Galbraith, dwelling, $2,000; F. Cohen, store and dwelling, $7,500.

Warren & Wetmore, New York, are said to have completed plans for the new Ritz hotel at Montreal.

The Toronto General Trusts, will erect at Toronto an eight story brick and steel office building, to cost $375,000.

A three-storey apartment house, to cost $14,000, will be erected at Toronto, by Mrs. E. D. Y. Cohen.

J. D. Byrne has received a permit to build a $17,000 addition to his apartment house at Vancouver.

W. J. Carrique, of Montreal, will erect a five storey building at Winnipeg next year at a cost of about $800,000.

A site has been selected for the Masonic Temple at London, and plans will be given consideration at once.

Having sold their present premises the Y.M.C. will next summer begin the erection of a new building at Montreal.

The Westholme Lumber Co. are to construct a three-storey building at Victoria. Work will commence at once.

J. Curry will build a brick addition to the apartment at Charles and Church Streets, Toronto, at a cost of $16,000.

The Y. M. C. A. have purchased a site on College Street, Toronto, on which a new central building will be erected.

J. W. H. Watts, is having extensive alterations made to the residence of M. P. Davies, Ottawa, at a cost of $15,000 to $20,000.

The church home at Montreal, has been granted a permit for a new $12,000 building. G. W. T. Nicholson, is the contractor.

Colborne P. Meredith, is building a steel and brick warehouse, at a cost of about $30,000, for Fotheringham & Popham, Ottawa.

The Northern Crown and Commerce banks have acquired building sites at Red Deer, Alta., for the erection of large buildings.

Joseph Sayward will erect a six-storey building at Victoria, the ground floor of which will be used for stores and the rest for office purposes.

The Canadian Order of Foresters have applied for a permit to erect a five-storey office building and hall at a cost of $50,000 at Toronto.

The plans for the addition to the premises occupied by Kelly, Douglass & Co., at Vancouver, are now completed. The new building, will cost $80,000.

Building permits recently issued at Hamilton are as follows:—D. Kelly, two houses, $2,400; John Poag, house $12,500; H. J. Bush, house, $2,000.

Ald Martin, Cobalt, will erect a $50,-

000 hotel before next spring, the building to be six storeys in height, of fireproof construction throughout.

At a meeting of the directors of the Vancouver Labor Temple Co., Architect Hooper was engaged to prepare the plans for a $60,000 structure.

Colborne P. Meredith, Ottawa, has prepared plans for a new school building, to be erected at Forester's Falls, Ont., next summer, at a cost of about $5,000.

The proprietors of the Wa Wa hotel, Lake of Bays, Ont., have decided to make an addition of over 40 rooms, to be ready for the opening of next season.

A. J. Hill, dwelling, $12,000; Kemp & Priest, three pair dwellings, $12,000; R. Burkell, two pair dwellings, $10,000 are recent building permits issued at Toronto.

William C. Todd will erect a handsome residence at Vancouver, to cost $14,000. A permit for the structure was issued by the building inspector recently.

The H. A. Massey estate made a proposition to the Senate of Victoria University, Toronto, to erect a men's residence on the university property. The offer was accepted.

The following building permits were issued at Quebec recently:—Fred. Hunt, dwellings (four), $4,000; Bryson, Graham & Co., warehouse, $12,000; T. J. Somerville, dwelling, $2,000.

The Home Furnishing Co., Toronto, has purchased a site on King Street, just west of the Terminal Hotel, for $15,000, and will erect on it a four-storey store in the spring.

Leslie & McNeil, St. Marys, Ont., have been awarded the contract for the masonry work of the Mutual Life Assurance Building at Waterloo, Ont., at $70,000. Total estimated cost $175,000.

St. John is soon to have a new office building of the modern type fitted with all conveniences usually to be found in such a building. The building will be erected on the market square.

Storey & Van Egmond have awarded the contract for a store building at Regina for F. M. Crapper, to contractors Dand & Woods. The building will cost when completed about $10,000.

Contracts have been signed for the erection of the new building for the Times Printing & Publishing Co. at Victoria. The contractors are Adkison & Dill, and the contract price was $70,000.

Tenders are being called for the addition to the C.P.R. Empress Hotel at Victoria. The addition will be of steel buttressed with brick and will be six storeys in height. The new portion will contain sixty-eight bedrooms. The cost of the new part will be about $150,000.

H. R. Reynolds has been granted a permit for a $15,000 building on the north side of Bloor Street, Toronto. There will be stores and a moving picture theatre on the ground floor and the upper part of the building will be for apartments.

Plans for the erection of a large and costly apartment house to be located at Vancouver have been submitted to the civic authorities there. The cost of the entire structure will be $120,000. W. A. and J. R. Lightheart are the contractors.

Ex-Ald. Charles Wilson, of Vancouver, has presented plans for a brick block which will be erected there. The permit for the work will be taken out shortly. The building will be five storeys in height and will cost in the neighborhood of $75,000.

A splendid twelve-storey office building will be erected on the site recently sold by the Sulpician Order at Montreal. It is understood on a most competent authority that the building is to be built either directly or indirectly for the Grand Trunk Pacific.

Two costly apartment houses are to be built in the near future at Vancouver. One is located on Howe Street. It will cost $20,000, and is being constructed by Hector Macpherson. The other is to be erected on Broadway. It will cost $7,000. W. Winn is the contractor.

A. Rivet, Montreal, has been granted two permits for houses, at that city. One block will comprise six houses to contain 18 families. and is to cost $15,000. Almost adjoining a $9,000 building will be put up to accommodate 12 families.

Senator Melvin Jones, Toronto, has purchased a large site on St. George St., where he will shortly erect a residence; R. G. Geary has applied for a permit to build an apartment house there, at an outlay of $10,500; H. J. Hudson is to build a three storey apartment house, at Wilton avenue and Jarvis street. Cost $40.000.

The plans for the addition to the Empress hotel at Victoria, costing, when completed and furnished in the neighborhood of $150,000, have been approved by the Montreal authorities, and have arrived in Victoria. The plans call for the addition to be built over the existing kitchen annex, the superstructure to be of six storeys. Tenders have been advertised for. The addition will contain 68 bedrooms.

Vancouver's recent permits include :— Vernon Bros., dwelling, $5,000; J. Skeffington, dwelling, $2,000; L. B. Moore, dwelling, $3,000; C. R. Drayton, store and dwelling, $3,000 ; C. C. Delbridge, store and dwelling, $4,000 ; C. B. Armitage, dwelling, $2,200; Brackman & Ker, alterations, $2,500; P. J. McEwan, dwelling, $2,000; W. J. McDonald, dwelling, $2,400; A. Shaw, dwelling, $2,500, and G. R. Carson, dwelling, $3,000.

Recent building permits granted at Vancouver include : L. D. Chesman, four dwellings, $8,000; Vancouver School Board, Manual Training School, $2,000; Archer & Cowan, dwelling, $2,700; D. A. Acorn, dwelling, $2,000; H. B. McBain, dwelling, $4,000; G. H. Fry, dwellings, (3) $6,000; A. J. Sloan, dwellings, (2), $4,000; Chas. Cook, dwelling, $2,000 ; J. D. Murray, (3), dwellings, $3,600; R. J. Coleman, dwelling, $2,800; R. J. Coleman, dwelling, $2,800; R. J. Coleman, dwelling, $2,800; Jas. Murray, dwelling, $2,000.

Public Buildings.

A new $16,000 separate school will be built at Fort William.

The G.T.R. will build a new terminal station in the east end of Montreal.

A by-law was carried at Smith's Falls on January 1 to raise $46,500 for a new Collegiate Institute.

The members of the Murray Street Baptist Church, Peterboro, have decided to erect a $35,000 edifice.

The congregation of St. Andrew's Church, Sydney, N.S., will proceed with the erection of a new church.

An isolation annex will be added to Guelph's General Hospital, and a new nurses' home will be erected.

Victoria ratepayers will be asked to vote on the giving of a free site for the erection of a new theatre there.

A new vaudeville playhouse is to be erected soon by T. Matthews at Vancouver, at a cost of more than $75,000.

Camrose, Alta., has secured the Scandinavian College, which will be built at once to accommodate about 200 students.

The Dominion Government has granted land between Montreal South and Longueuil, as a site for a new military school.

In the annual report of the chairman of the J. H. Stratford Hospital board, Brantford, he recommended a complete overhauling of the heating system of the institution.

Superintendent O'Borne, of the C.P.R., stated that the new C. P. R. station at Guelph would be built this year. It will be situated near Goldie's mill, in the northern part of the city's business section.

Foundry Company Celebrates 25th Anniversary

Pease Foundry Company Entertain Their Employes and Announce the Appointment of a New Boiler Salesman to Call on the Trade in Toronto.

Several hundred employes and members of their families were entertained to a social evening on Friday evening, Jan. 7, by the officers and directors of the Pease Foundry Co., Toronto, at their factory on Shaw and Ossington avenues.

Twenty-five years ago, in 1885, J. T. Sheridan and a number of other gentlemen established the Pease Foundry Co., in small premises on Church Street, shortly after removing to the Queen Street premises vacated four years ago. In 1890 Sheridan Bros. established their foundry at New Toronto, and in 1904 the factory on Shaw Street was constructed. Beginning with only three or four workmen, Mr. Sheridan, who has been president from the beginning now has a pay roll of over 200 at the two plants and the head offices on Queen Street east.

Gatherings of the company's staff have been held on several occasions in recent years, but this was the first time such a big affair was arranged, the company arranging the mounting room as a dance hall and the steelworks shop as a card and smoking room. Refreshments were also supplied as well as several pleasure vans to carry the New Toronto foundry staff to the celebration.

President Sheridan, in welcoming the staff and bidding them enjoy themselves, expressed his pride at seeing such a large company present and compared it with the small beginnings of a quarter of a century ago. He spoke of the success of the company and gave due credit to several who had been employes of the company for from 15 to 20 years. It was his policy, he said, to encourge faithful service by promoting those who showed ability, and he announced the advance of Wm. Crane, superintendent of the Shaw Street works for several years, to the position of Toronto city traveler, selling hot water and steam boilers. Mr. Sheridan also announced that the foundations are already in for the company's new foundry plant, on part of the five acre site at the head of Ossington Avenue. Vice-President Ross and the different department heads also spoke briefly in reference to the splendid feeling existing between the company and its staff, and the announcement was made that the success of the gathering ensured its being made an annual event in future. A pleasant feature of the evening was the presentation of a gold watch and fob to Superintendent Crane, by the Pease Employes' Benefit Association, in appreciation of his services as secretary of the fund.

The committee in charge of the celebration was composed of J. M. Bell, sales manager, J. R. Phillips, superintendent of the New Toronto foundry; Wm. Crane, superintendent of the Shaw Street factory, and David Millar, manager of the Pease Heating Company, Toronto, who have charge of the furnace installation work.

The erection of the new foundry on Ossington Avenue, which will be completed during 1910, will mean the centralization of all the company's works, and the New Toronto foundry will be sold. The foundry will be 90x300 feet in size and a new pattern shop, japanning shop, etc., will also be erected. Later on Mr. Sheridan hopes to erect a club house for the staff. The buildings already built include a warehouse, 75x300 feet, mounting room, 75x100 feet, machine shop, 50x100 feet, and dome room 50x100 feet. Besides this the company has a 600 foot siding connected with the Canadian Pacific Railway.

J. T. SHERIDAN,

President and General Manager of the Pease Foundry Co., Toronto.

J. L. ROSS,

Vice-President and Secretary-Treasurer of the Pease Foundry Co., Toronto.

Speaking reminiscently Mr. Sheridan mentioned that one of his staff of between 20 and 25 years ago was Frank Whitelaw, who with his brother Norman, formerly conducted a steamfitting business on Queen Street near Sherbourne. Mr. Whitelaw afterwards entered the employ of the American Radiator Co., and in recent years had charge of the boiler foundries of the company at Detroit and Buffalo, and more recently has been over all the boiler manufacturing plants. Now, Mr. Sheridan understands, Mr. Whitelaw, is succeeding George Downs, formerly sales manager of the American Radiator Co., at a salary of $15,000 per year.

PLUMBING TRADE PATENTS.

The following is list of Canadian patents granted on Dec. 21, 1909, relating to plumbers' and steamfitters' appliances, and furnished by Fetherstonhaugh & Co., 5 Elgin St., Ottawa:

122704. G. Land, Grant Pass, Ore., flush tank siphons.

122706. W. M. Still, A. G. Adamson, London, Eng., steam traps.

122762. B. S. Harrison, New York City, gas and air tight joints.

122789. F. A. Lewis, Wichita, Kansas, water traps or strainers.

122850. E. S. Wheeler, Detroit, pressure gauges.

122958. H. E. Jennison, Fitchburg, Mass., adjustable blocks for radiators.

122959. F. W. Johnston, Excelsior, Minn., water motors.

122963. J. Kellington, New Westminster, B.C., gas engine mufflers.

122982. J. J. Meyer, Chicago, Ill., inverted hydro-carbon and gas lamps.

122993. F. T. Reid, Kiows, Kan., valves.

123007. H. E. Smith, London, Eng., apparatus for production of water gas with improved methods of carburation by means of oil or other heavy hydrocarbons.

Contracts for the annual supplies required by the Toronto Civic Works Department have been granted to the Dominion Sewer Pipe Co. for sewer pipe; James Robertson Co., lead pipe, at $5.29 per hundred pounds; Canada Metal Co., brass and bronze castings; Canada Foundry Co., cast iron pipe, (12-inch), at $16.75 per length; hydrants and stop valves, Gutta Percha Rubber Mfg. Co., and Dunlop Tire & Rubber Goods Co., rubber valves; Keith & Fitzsimons Co., Somerville, Ltd., and Dean Bros., brass work for house services; Reid & Brown, iron valve and stop cock boxes, and special castings at $2 per hundred.

PLUMBING AND HEATING MARKETS

MONTREAL.

January 14. As was anticipated, several price changes have occurred with the new year. Lead is now 25 off, steam boilers 0 and 5, hot water radiators 50 and 7½, and steam, 50 and 7½ and 2½. Solder is very firm, but unchanged.

Manufactures report fine business. While at this time it is usual for stock to be collected for spring requirements, most of the stuff being produced is actually going into use. Soil pipe, boilers and radiators are not only wanted locally, but at outside points, which shows that building has been active all over the country. Supply houses have been going through their stocks, and unless the pressure lets up on immediate requirements it looks as if manufacturing plants would find it difficult to satisfy the wants of the jobbers.

Everything points to a very strong demand this spring, and the trade anticipate that much scratching will have to be done to satisfy all requirements. Plumbers and steamfitters are busy, especially considering the time of the year, and judging from the plans being prepared by the architects, there will be a great building boom in the spring.

SOIL PIPE—Soil pipe is still being wanted for immediate requirements. Some large orders have come in from outside districts, and this with the local demand keeps supply houses busy. The market is firm, and we quote light 60 off, and heavy, 70 off.

LEAD—An advance has occurred in lead pipe and waste. For some time lead products have been hardening. Trade is good for the opening weeks of the year. We now quote pipe and waste at 25 off; traps and bends at 50; caulking lead, 5c per lb.

SOLDER—The market is very firm, but there is no change in prices. The demand is good, plenty of solder being wanted for immediate use. We quote half and half, 20c; wiping, 18½c.

IRON PIPE—No change is reported in iron pipe, although the market is firm on account of the advances in raw material. Trade is good, some unusually heavy orders coming through. We quote: ¼-in. black, 63; galvanized, 48; ⅜ black, 59; galvanized, 44; ½ black, 69; galvanized, 59; ⅝ to 4-in. black, 71½; galvanized, 61½.

RADIATORS AND BOILERS — Advances are reported in boilers and radiators. There is a very good demand in evidence, and as yet little opportunity has been given for the accumulating of stock for future needs of the trade. The demand is very general. We now quote: Steam boilers, 60 and 5; hot water boilers, 50 and 10; wall and hot water radiators, 50 and 7½; steam radiators, 50, 7½ and 2½ per cent.

ENAMELWARE — Manufacturers are busy on orders, and there is no let up in the pressure on the plants. The market is firm, and prospects in this line, as in others are exceedingly bright.

TORONTO.

January 14.—Quietness still pervades the plumbing market, the actual business passing at present being very small compared with a couple of months ago. Supply houses are working on specifications for new business when the building trade opens up again.

There is a stiffening in enamelled bath prices outside the city, quotations for the whole province now being on an equal footing. Lead pipe and waste have smaller discounts, and solder is somewhat stiffer. The higher price of pig lead is responsible for these two latter changes.

Master plumbers are working on finishing-up in new residences sufficiently far advanced to be closed in. There is probably a greater number of houses being constructed all through this winter in Toronto than ever before. Repair jobs, too, are keeping the men engaged to the time limit.

Plumbers in the U. S. are affected by an advance of 10 per cent. in the price of chain used in connection with plugs on basins and bath tubs. The advance came into force on January 1. Steamfitters and boiler makers across the line will be affected by a movement to raise the cost of radiator valves 5 per cent., and a similar advance in gauges, gauge cocks and brass goods used for boiler trimmings. The higher prices of stove bolts have again been reaffirmed.

One of the most important business moves in the plumbing and heating world locally is the change in the terms of sale which has taken effect since the beginning of the month. This is a reduction in the limit of credit for net prices from 90 to 60 days, and applies particularly to heating goods, pipe and brass lines.

ENAMELWARE—Now that demand has eased off for the season manufacturers and supply houses are taking advantage of the breathing spell to take stock and rearrange their goods. The clashing of local and eastern houses, in Eastern Ontario especially, has been removed and a stiffer price tone is the result. Outside points which had somewhat of an advantage over the local trade in the matter of quotations amounting to about 5 per cent., are now quoted the same rate as Toronto, thus making conditions more equable. Since December 1 there has been a stiffening of bath prices. Five-foot baths of high grade are now about $16.10, with other sizes and grades showing somewhat of a proportionate advance. Since a year ago bath quotations have gone up about a dollar on the various sizes.

LEAD PIPE—The advance hinted at a fortnight ago has come about. Pipe and waste are now quoted at 25 per cent. off instead of 27½ per cent. This is not a great advance to be sure, but it is sufficient indication to show the strength and feeling of the market. The continued high price of pig lead is responsible. Caulking lead because of competition remains unchanged at 4¾c a pound, and traps and bends remain at 50 per cent. discount.

SOLDER—As with lead pipe and waste so with this line. The stiffer price of pig lead and the advancing tin market has shoved up solder prices at least ¾c a pound on all grades. Wiping is now about 19½c and half-and half 20c.

BOILERS AND RADIATORS—Specifying and preparing for the spring and summer building season is occupying the time and attention of heating engineers these days. Local prices remain unchanged, though some outside points which had been ordering at Toronto quotations now show an advance, 5 per cent. having been added to cover freight charges. Hot water boilers and radiators are 50 and 10 off and steam radiators 50, 10 and 2½ p.c.

IRON PIPE AND FITTINGS—Sales of iron pipe for present and future shipment continues, and is one of the best actually selling lines at present. While prices remain unchanged the market is quite firm. The range of prices given in last issue still rule, there being no decided stand by all supply houses. Standard bushings run from 60 to 70 per cent., malleable bushings, 60 to 65 per cent., and nipples, 70 to 75 and 10, In the U. S. makers of steel pipe have adopted a new card of Pittsburgh basing discounts. This card came into force with the beginning of the year. The discounts are one point lower than the old card, so show a slight advance.

SOIL PIPE—Unchanged in price and condition is this line. Light pipe is still 60 and fittings 70 per cent. Eastern U. S. manufacturers of cast iron soil pipe and fittings have advanced the price of soil pipe one point and fittings one-half point.

BRASS GOODS—Sales of brass gas and electric fixtures have quieted down, though the brass trade generally is busy—much busier than at the commencement of 1909. Prices are unchanged. High grade compression work is 60, and standard 70 per cent.; fuller work is 70 per cent.

Condensed or "Want" Ads.

BOOKS FOR PLUMBERS.

PRACTICAL HINTS ON JOINT WIPING, for beginners in plumbing.—This book contains two original articles on joint wiping by experts, together with a selection of letters and articles on various important phases of the subject. 66 pages, 41 illustrations. Price 25c.

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MACLEAN PUBLISHING CO., Technical Book Dept., 10 Front Street East, Toronto.

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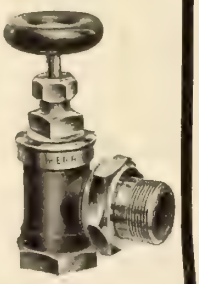

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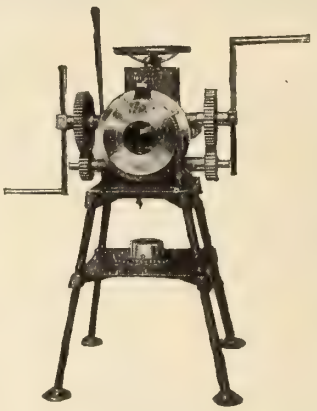

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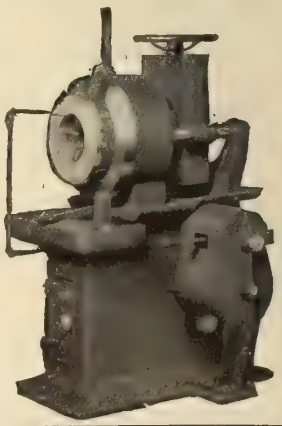

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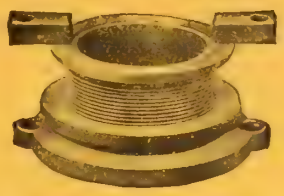

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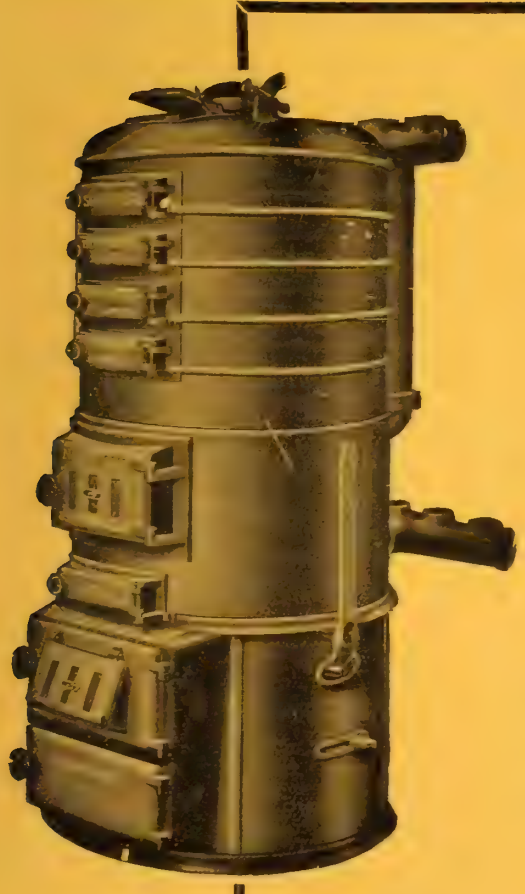

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Plate F
199

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Vol. IV, No. 2 (New Series). Publication Office : TORONTO, FEBRUARY 1, 1910. Old Series, Vol. XXII. No. 3

"It's Just as Good"

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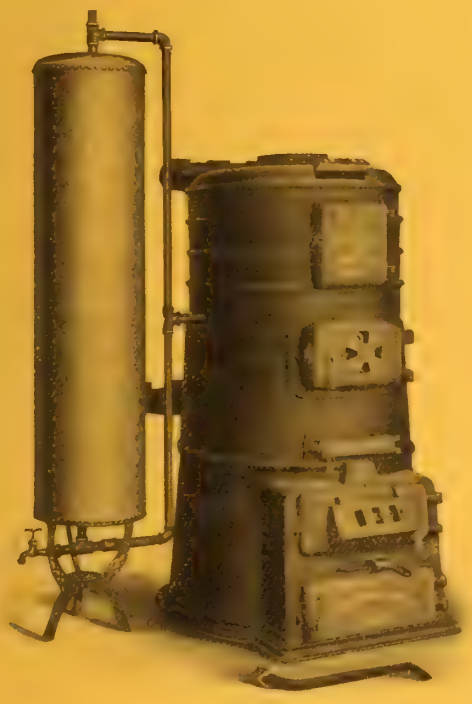
The Daisy



is the talk some people use when they try to sell their boilers, yet, unconsciously they pay a tribute to the DAISY'S WORTH and PRESTIGE.

There is but One Genuine

that is just as good, and it is the incomparable, unapproachable pioneer of HOT WATER Boilers, 30,000 of which are in active service—its name, need we tell you, is : : : :

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Built on honor—of the best materials money can buy, by superior workmen, under the direction of competent engineers, and at the best plant ever devoted to the production of a Hot Water Boiler. : : :

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Cast Iron Enamel Ware

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Beaver Brand Roll Rim Sink

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All Jobbing Houses

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Plumbers and Steamfitters

You can supply pure water, free from contamination, at good pressure, to every country home by installing the

Peerless Water Service System

What a Customer thinks of the "Peerless" System :

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Gentlemen,—

Replying to your enquiry, I have great pleasure in stating that the Air Pressure Water System installed by you at my country home a year and a-half ago, has been fully up to my most sanguine expectations or desires; in fact, we have found quite as much satisfaction therein as in the general water works system in our Toronto home.

As I presume the reason for your inquiry is to impart information and confidence to others contemplating the installing of such a system, I would say we have two tanks of one thousand gallons each, which, with a three horse-power gasoline engine, are placed beneath our carriage house and the water is drawn from Lake Ontario some three hundred feet distant, being raised at the same time about twenty feet more or less. It serves four bathrooms, four water-closets, two kitchens, laundry, carriage house, stables, poultry house, with twenty hydrants around the grounds, and throws a stream of water two storeys high quite easily. When using for five streams of hose, as we sometimes do for the lawns, it is necessary to keep the engine working at the same time to maintain the pressure, but where a single stream only is required such is, of course, unnecessary. As its pumping capacity is twelve hundred gallons per hour, the amount of water required, of course, determines the necessary working time of the engine

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Yours very truly,
JAMES RYRIE.

Remember, we will provide you with **complete specifications** and **prices,** and will guarantee continuous pressure, wherever needed, at a most insignificant cost.

The "Peerless" System has come to stay, and will have completely supplanted the old open tank system before many years are out.

Why not be the **first** one in your district to install a "Peerless" System ? It will mean valuable prestige to you and there'll be a big volume of trade to follow.

The accompanying cuts will give you some idea of the plant, which any plumber can easily install.

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TANKS We handle every kind of Tank—Pneumatic, Storage, Gasoline and Oil Tanks, and we are in a position to offer best prices in Canada.

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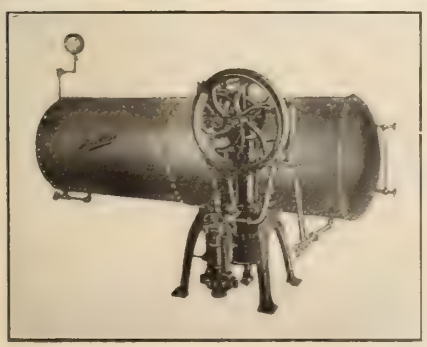

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All fitted parts of "Vulcans" are milled. Every detail of their manufacture insures extended wear and true interchangeability of parts.

We maintain and guarantee the integrity of our tools throughout the world. Get discounts from dealer. Free literature C '09 from

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"The Cutters that Cut"---For 1910 and hereafter

"Stop the Losses this New Year and Hereafter in Your Shop"

You have sometimes detected a waste of time, which is money, going on in your business; if not, start now and watch. OUR AIM IS TO MAKE A PART OF THIS WASTE A THING OF THE PAST, for every time you have detected a leakage in your shop there are twenty times which you knew nothing about. Would it not be of interest to you to stop one PART of this loss (PIPE CUTTING) once and for all?

YOU SAY:—Naturally I know of these losses, but I have made money without your Cutters.

TRUE, SIR; and doubtless you realize the value of every penny, but to make more should be your aim.

For an example of part of your waste, we will take PIPE CUTTING and PIPE REAMING and put same to figures, showing a cost the old way and a saving the—**"VOSPER WAY"**

Example:—A small heating job where you have to cut 300 pieces of pipe and ream.

TIME--(Old Way)

1 Man makes a cut in 3 minutes
1 Man cuts 20 cuts per hour
1 Man cuts 300 cuts in 15 hours
15 hours' time at $0.20 per hour....$3.00
Reaming 300 pieces 5 hours at $0.20.. 1.00

Cost.....$4.00

(Note---No extra cost included for extra wheels or time lost in split pipe or time lost in making crooked cuts.

***Time--*"VOSPER" Pipe Cutters, which cut the Pipe and Save Reaming.**

300 cuts:
1 Man cuts a pipe in 2 minutes
5 hours saved at $0.20.....$1.00
Reaming saved..... 1.00

Amount saved on 300 cuts.....$2.00

(Note—No extra cost included for grinding cutters (if needed). No extra cutters needed, as same will last over a year. No splits in pipe, as it is impossible to do so, and no time lost making crooked cuts, as this is also impossible to do with—**"VOSPER" Pipe Cutters.**

ADVICE:—If you do not have one of the **"VOSPER" Pipe Cutters---**"The Cutters that Cut"---you will be paying for one just the same by using old methods, and your loss will continue to run on when you might have saved the leakage, which is money. Can you afford to be without a **"VOSPER" Pipe Cutter?**

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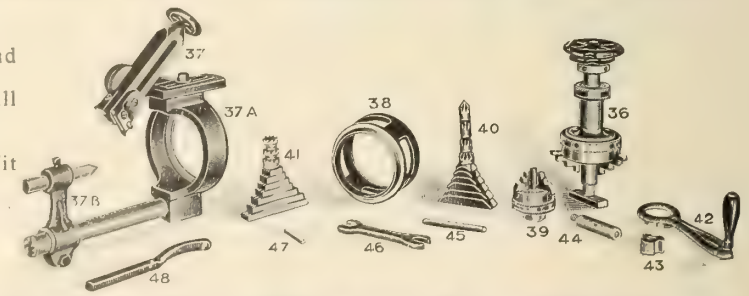

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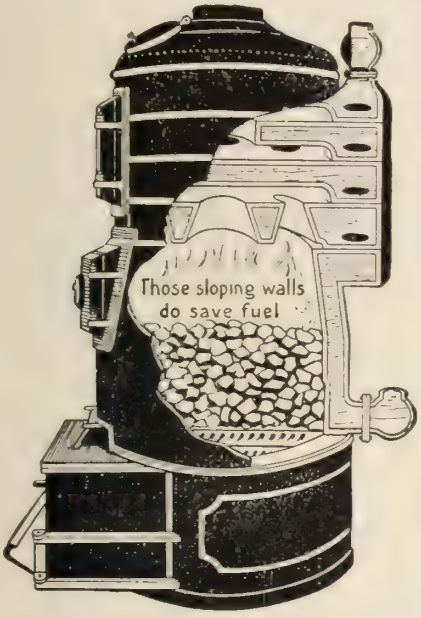

Illustrating the sectional view of Gurney-Oxford Boiler, note the sloping walls round fire-pot and on first water section.

Your client will appreciate this fact, if you'll but give the opportunity. Specify the Gurney-Oxford Boiler and Radiators, for various reasons. Your advice so given will reflect the most favorable comment on your good judgment. Refresh your memory with some of the bright features in the Gurney - Oxford Boiler — revolving grate bars that actually bite off the ash. Each bar on its own cog wheel. Insloping walls round fire pot, and bell-shaped flue openings on first water section—positive heat factors that quickly interest and convince. Iron to iron joints—no rubber gaskets used where sections come together. *"The push nipple joint is all that could be desired."* Then the

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Plumber and Steamfitter

and Sanitary Engineer of Canada

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TORONTO, FEBRUARY 1, 1910

HEATING HYDRO-ELECTRIC STATIONS.

Some dissatisfaction has been expressed among the heating trade at the manner in which the Ontario Hydro-Electric Commission has asked for tenders for the heating of their stations at a number of towns in that Province.

At present 11 stations are proposed to be heated, and the towns in which these stations are located are: Niagara Falls, Dundas, London, Toronto, Guelph, Berlin, Stratford, St. Mary's, St. Thomas, Brantford and Woodstock.

Separate contracts for the supply of the boilers, radiators and valves required in the work have been entered into, so that all the steamfitters are required to supply are the pipe, fittings and labor.

A charge of $1 per plan is made to all those who wish to tender on any of the work at any station; and after the work is completed 80 per cent. of the contract price will be paid, the remaining 20 per cent. being payable 60 days afterwards, "if satisfactory."

Steamfitters object to the "if satisfactory" phrase, contending that if they carry out the work according to the specifications provided by the Hydro-Electric Commission and the system then proves unworkable they should not be held responsible for that defect. Already it is stated that the boiler at one of the stations is not capable of doing the work.

This matter was brought to the attention of the Hydro-Electric officials by a representative of Plumber and Steamfitter, and he was informed that the opinion if generally held by steamfitters was erroneous. There must be misunderstanding somewhere, he said. It was true that separate contracts were let for the boilers, radiators and valves, because the Commission thought they could do better in the matter of price. Instead of advertising for tenders the Commission had written the steamfitters in the various towns where the stations are located, asking for tenders. The $1 charged for the plans would be returned when the plans were sent back. So far as the holding back of the 20 per cent. of the contract price was concerned it was nothing different from what is stipulated in other building contracts. The "if satisfactory" phrase meant really nothing, as even if the heating system installed according to specifications, proved unworkable, the steamfitter would get his money. The Commission did not expect to heat the stations as well as an office would be heated; so any chances on that score would be taken by the Commission.

With the exception of the Woodstock and St. Thomas stations it is expected that all the contracts will be let within a week. The heating plans for all the staions call for single-pipe systems.

THE PLUMBER AS A CITIZEN.

Although the plumber is the butt of numerous ill-natured jokes, and is looked upon in many quarters as the fleecer of innocents, it cannot be denied that he takes his share of civic responsibilities. There are many representative bodies in Canada containing members of the plumbing and steamfitting industry. And he is no silent member either. He speaks his mind boldly, and fears not the consequence. It would be a great thing for the country if there were more plumbers on the public boards. There would be more hope for sanitary reform.

What question is more important than that of sanitation, and yet what a minor position it has upon the slate of an average candidate, who talks largely of local questions such as road repairs, lighting, etc., but seems to concern himself little about sanitation and water. And yet these two last points are the most vital ones. The precious health of the community rests upon them.

The people should be awakened to the seriousness of the situation. They should be told that before comfort comes health, and that good sidewalks, and fewer saloons, will not save a member of the family from typhoid or other disease contracted through bad sanitary systems.

Sanitation must be the first plank on the slate, and not the last, and the plumber is the only man who can lead the crusade. He is seemingly the only man who understands the danger. He has to run the risk of his work being discounted by the challenge that he has an axe to grind. But he is used to slurs, and he can stand it.

On all health committees there should be a preponderance of sanitary experts. What does a dry goods man know about sanitary reform? How can he decide upon the best by-laws for a community? He has either to butt in in full ignorance, or blindly follow the lead of some one else. There should be practical men upon such committees, men who are experts in sanitation, and who take an interest in such matters. Then, and only then, can a community of people secure the best plumbing laws and the best water system. Inexperienced men may blunder into schemes, which aparently look good, but which may entail great public expense, and be no improvement at all. Sanitation must be settled by sanitary experts.

Good luck, therefore, to those plumbers who are plugging away for the public good, and who are giving up valuable time to institute necessary reforms. A plumber

can less afford to be absent from his shop than any other employer. But he is public spirited enough to bear the loss. He realises that it is up to him to arouse the people to the vital importance of sanitary reform, and of the necessity of putting it in the front of any public reform, and not hiding it away at the back.

CLEANLINESS IN SCHOOLS.

In discussing the question of medical inspection in the schools, Miss Clara Brett Martin advances an idea that ought to be accepted by all. She emphasizes the importance of providing children with water, soap, towels, and other means of cleanliness. "Every railway station, every railway coach, and every hotel, and even the large retail stores, now keep these primary requisites of cleanliness for the public; yet, in dread lest paper be wasted, a towel be lost, a piece of soap stolen, some water allowed to run at a tap, or a door loosened from its hinges, our schools are kept in a condition that ignores the laws of cleanliness."

A child may come from a home in which these facilities are lacking, perhaps from poverty, perhaps from neglect. In either case, the right policy is to provide the facilities in the school. Do not be satisfied with enforcing cleanliness as a duty, but create an enthusiasm for cleanliness by providing plenty of hot water, good soap, and clean towels. Then the untidy child will not only become clean, but will go home with new ideas of cleanliness, and will become a missionary of cleanliness in the home.

Cleanliness and health are more important than grammar and geography. The theory of hygiene is taught in the schools; how much more important to teach hygiene in practice. Water is good for the mind as well as the body.

OFFICIAL NEWS

N. A. M. P. & S. F. of CANADA

OFFICERS 1909-10

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Chairmen of Committees,—Legislation, H. A. Knox, Ottawa; Sanitary, P C. Ogilvie, Montreal; Apprenticeship, J. Griffin, Montreal; Essay, E. Russell, London.

Next Convention will be held at Toronto the last week in August, 1910.

OBEY THE PLUMBING REGULATIONS.

The journeyman plumber sometimes prides himself in dodging the regulations because in doing so he fools the plumbing inspector. In doing this, writes James Guy, in Domestic Engineering, he makes several mistakes. The regulations in regard to the weight of pipe, methods of making joints, repairing leaky and cracked pipes, and many other things relating to practical details of work, were all made by practical men, by first-class plumbers. The rules were formed to insure first-class work and as they were making the rules for themselves they did not make them in such a way as to increase the cost of workmanship.

In olden times, when plumbing rules were new, the journeyman said to himself that there was no reason for putting three-quarters of a pound of lead per inch diameter into the hub of an extra heavy pipe. So, with some old newspapers in the bottom, and oakum on top of that, he filled up the hub with a thin ring of lead approximately flush. This took rather more time than putting in the ordinary quantity of oakum, the thin ring of lead required very careful calking and sometimes had to be taken out and poured a second time, but in the end he effected a saving of one, two or three pounds of lead, according to the size of the joint. This gave him great satisfaction.

On one occasion where work of this kind had been done it was brought to the attention of the master plumber, who happened to be of the type known as a "skin." He had no love for inspectors or rules, but he remarked in regard to the work: "Didn't the fool know that while he was saving 12 cents' worth of lead he wasted 25 cents' worth of time." There are a great many such "economies" in plumbing and heating. Savings can be made in the expenditure of material, but they cost more than they are worth. With a thin ring of lead. unless unusual care has been taken with the oakum, the lead will sink in places, being driven down before it expands so as to fill the joints. Where a line is subject to a water test, a few such defective joints will cost perhaps twice as much in time as if they had been made in the regulation way.

Cracked lengths, cracked hubs, blow holes, that cannot be plugged, and other similar defects, are often put in place with the hope of getting them passed by the inspector. If they are found the usual song is, "We didn't see them," or, "We hadn't noticed them." Such an answer would pass muster if the blow-holes were not always carefully turned so as to bring them out of sight. It is far better for the master plumber frankly to condemn such pipe and refuse to put it into a job than it is to run the risk of having to take the defective pieces out. It is always the case that good morals and good business are coincident.

WANTS SASKATCHEWAN PLUMBERS ORGANIZED.

A. D. Henrich, of L. B. Henrich & Co., Moose Jaw, Assa., was a caller at the Toronto office of The Plumber and Steamfitter this week. Mr. Henrich reports a splendid season's business, with a good beginning made in the development of a trade in installing plumbing systems with water pressure tanks in farm houses. In this line he expects a big development next season.

"I would like to see a provincial association organized in Saskatchewan, taking in Moose Jaw, Regina, Saskatoon, Prince Albert and other places. The trade is badly cut up and there is need for organization. I will do what I can to help the movement along."

"What about plumbing inspection in your town?" Mr. Henrich was asked.

"Our inspector is not a practical plumber, but he does the best he can," was the reply, "but some people take advantage of his lack of knowledge and fool him. One of my journeymen, for instance, showed me a cracked section of pipe he had installed in the drain under a cellar floor. He said the inspector had been on the job and passed it, the journeyman having fooled him in the test by plugging it above the cracked pipe. The journeyman thought it a good joke, but I called him to time by ordering him to take out the bad pipe and put a good section in, and do it in his own time, too.

"I demand a good price for the work I do and do not want my reputation spoiled by poor workmanship. When a customer asks me to figure on a job and tells me I'm too high, I tell him that my price is for a good job, and if he wants a cheaper job he had better give the work to the lowest bidder. This policy pays, as I win the confidence of those who want good work and are willing to pay a fair price for it."

Plumbing Inspectors Hold Fifth Annual Convention

President Charles B. Ball, in His Address Reviews the Progress of the Association—Suggests that a Universal Plumbing Code be Drafted in Sections, One Point Being Discussed at Each Convention — Some Interesting Addresses and Helpful Discussions.

The fifth annual meeting of the American Society of Inspectors of Plumbing and Sanitary Engineers was held at Trenton, N.J., January 20-22, the attendance being larger than at previous gatherings at Washington, Cleveland, Chicago and Omaha, this being due to the progress being made by the organization and the fact that this year's meeting was held at Trenton, the headquarters of the sanitary pottery industry in America. No Canadians were amongst the delegates, however.

W. G. Williamson, Detroit, was elected president, and Thomas J. Claffy, Chicago, secretary-treasurer. The 1911 convention will be held at Milwaukee.

Many interesting addresses were delivered at the convention on "Sanitary Earthenware," "The Evolution of Water-Closet Manufacture," "Standardization of Plumbing Material," "Syphon Jet Closets, Can They be Improved?" "Development of Sanitaryware Bodies in the United States," "Closet Bend Ventilation," "The Evolution of the Water Closet," "The Privy, Its Uses, Abuses, Dangers and Arraignment," "Equipment of Public Comfort Stations," "The Plumber and the Inspector," "The Plumbing Inspector and the Board of Health," "Exact Plumbing Design," "Factory Plumbing, Sewerage and Ventilation," "Lavatories and Urinals," "Public Comfort Stations," "Factory Closets," "Use of Three Inch Soil Pipe in Water Closets," "Floor Connections for Water Closets and Slop Sinks," "Relationship of the Plumber and the City Engineer," and "Application of the Cleveland Plumbing Code." These papers will be published in future issues of The Plumber and Steamfitter.

PRESIDENT BALL'S ADDRESS.

The steady growth in numbers, while mainly due, as it should be, to additions from the ranks of inspectors, has also resulted in placing on the rolls quite a numerous company of men noted for their contributions to plumbing literature and design, and able and willing to render good service to our organization. In geographical range, the society now extends from Halifax to Honolulu and from Winnipeg to Panama. It is, at the present time, a distinct loss of prestige for any inspector of plumbing in this wide-spread area not to be a member of the society, as it is, on the other hand, a loss to the society not to receive his support and contributions. It offers to the young sanitary engineer his best opportunity to test his theories with the touch-stone of long established rules of practice in the plumbing art. The sanitary engineer has too long limited his practice to the bringing of a pure water supply to the building, or the taking from it its liquid wastes, without likewise concerning himself with the intricate problems of the transmutation of the pure water into sewage. The sanitation of buildings must, more and more, engage the attention of our best trained technical graduates, and membership in this society is an important aid to this end.

The papers read at the conventions and the discussions which have attended their presentation, have been widely disseminated through the unexampled cooperation of the trade press and are, therefore, familiar to you all. When assembled in the volumes of proceedings, these constitute a measure of progress in plumbing design without parallel. It will interest you to know that copies of these proceedings have been gratuitously placed in twenty important libraries and are also for sale by the society at cost to any purchaser.

A Universal Plumbing Code.

It was an original aim of the founders of this organization to formulate at the earliest practicable date, a universal code governing plumbing construction in town and city, and no meeting has passed without hopeful expressions having this end in view. Many of our members have engaged in the framing of code provisions and amendments and in one case, that of Cleveland, a complete and comprehensive ordinance was coonstructed which some of us heartily praise for its subject matter, but feel compelled to criticise as unwieldy in form. It seems out of the question for the society to secure the time and energy of its members sufficient to draw up an entire code, but it does not seem hopeless that this work may be accomplished in the end by taking up a chapter at a time. Is it not possible this year to have a committee work on such a draft of provisions for the house drain, for instance, and express their recommendatons in definite form at the next annual meeting? On disputed points, such as the material of the drain, the introduction of a main trap, etc., the draft should provide, by alternative sections, its adaptation to the wishes of any city authorities desiring to deviate from the recommendations of the society.

The Competency of Plumbers.

The standards of design and construction set by this society cannot be realized in any community where skillful plumbers are not found. The old-time criterion of a plumber's craftmanship, his ability to wipe a joint, is fast passing with the decrease in the use of lead as a material for piping. Whether we rejoice or lament, the fact remains. New standards of competency must now be set up. The present-day plumber must possess the ability to design sanitary systems alike in cottages and skyscrapers, and to construct them safely from the new materials, in every class of buildings, whether their walls be of frame or brick or concrete.

The boards of examiners of plumbers, who shall determine the competency of both masters and journeymen, may, in most cases, properly include the inspector of plumbing, and must not exclude, if their work is to be of the highest grade, the trained sanitary engineer.

Public Conveniences.

The society has stood for the establishment of public comfort stations in all our cities, and mainly through the special effort put forth by Jno. K. Allen, has succeeded, by agitating the matter and publishing literature on the subject, in securing the establishment of many of these stations. This is a field in which every member can actively cooperate with the society, both by efforts of publicity in his own locality and by the publication of data as to the cost of buildings and the operation of such stations. Every inspector of plumbing should engage actively in this campaign for decency, cleanliness, convenience and good health.

Factory Sanitation.

Factory sanitation, in its broad division of plumbing, ventilating and heat-

ing, of lighting and cleaning, has not received the study which its importance demands, when compared with investigations in similar lines. There is available, for instance, in technical libraries, a large number of books containing many profitable studies and conclusions in respect of school buildings in these regards, but there is no where any complete thesis upon the sanitary problems of the workshop. The installations of factory plumbing gives rise to many vexing questions by reason of the varying classes of employees whose convenience is sought, the few types of fixtures suitable for these uses, and the varying limitations of the locations in which these may be placed. Our society could inaugurate further study of these subjects, and when conclusions are reached, publish them so as to constitute certain authoratitive dicta applicable to factories.

The Testing of Plumbing.

Although the proceeding of the society contain a number of papers which consider the need of testing plumbing systems as to their security, and others which discuss methods for making tests, there has been but slight progress in these regards during the past five years. The practice is still unsatisfactory in most cities, and indeed much completed plumbing fails to be subjected to any test whatever. As to existing plumbing, it is well recognized that grave defects occur in a large proportion of the older installations and especially where earthenware drains predominate. Not much labor would be necessary to put in form a definite statement of the approved methods of applying the various kinds of tests, their comparative value, and the conditions to which each is applicable. If this were done and it received the approval of the society, a basis of advance would be available for application in cities where the practice is lax.

Conclusion.

The development and usefulness of our society will always depend upon the devotion of its members to truth and the common good. If they continue as in the past, to give of their time, money and service to advance its interests, its value to all will still increase in greater proportion than heretofore. Let no one think we fail because we differ in our views. Truth is a warrior. It invades the haunts of error. It loves combat. It prevails by conquest. Men cannot crush or destory it. Let us serve truth with confidence and new courage. I have firm faith in your purpose to render this service and, therefore, a fixed conviction that the American Society of Inspectors of Plumbing and Sanitary Engineers is but in the infancy of an extended career of usefulness to mankind.

COMMITTEE ON TESTS REPORT.

The consensus of opinion of your committee on tests is that in order to intelligently carry out the wishes of the society, we should start at the very beginning, and obtain data from which definite deductions can be made as to the natural, and not artificial, requirements for piping-system design so that we may be able to recommend a standard that will combine the greatest simplicity with absolute security.

In carrying out this policy we suggest that there be created conditions as nearly as possible like those that obtain in practice, using a single 4-in. soil stack which is the nucleus of all plumbing installations. We have had erected a test stack with various outlets and connections as shown on the drawing. Certain portions of the stack as indicated should be transparent, but the committee have not been able to accomplish this in the present stack.

Flushing Rim Cuspidor.

We recommend that a series of experiments be made on this or a similar stack, using various combinations of the fixtures shown together with open discharge, with both closed and vented running-trap interposed, and with various length of horizontal soil-pipe extensions at bottom. Tests to be made with this horizontal line both partially and wholly obstructed to simulate different degrees of back pressure from storm water. The various outlets "a," "b," "c," "d," "e," "f," to have combinations of hydrometers graded in inches and tenths, from which readings can be taken during the duration of the flow, which will show period and intensity of both pressure and partial vacuum. Extensions may be made with iron-pipe and fittings to various horizontal distances from the lettered openings so as to indicate what differences (if any) appear in the results.

In addition to the fixtures in place, other small fixtures could be set and actual results noted to corroborate the results indicated by the series of tests above outlined.

A. R. McGonegal, chairman; C. A. Bradbury, E. F. Kane, Thos. N. Thomson, J. J. Cosgrove, Committee on Tests.

THE EXHIBITS.

The principal exhibit at the convention was made by Haines, Jones & Cadbury Company, Philadelphia. Their exhibit of closets with the extended lip and split seat, also with integral vent and supply attracted a great deal of attention. They also had a lavatory made of vitreous ware on pedestal with concealed nozzle and trap moulded integral in the china, thus doing away with considerable nickel work and giving a fixture that is as near sanitary as is possible to make them.

Their "Hajoca" Flushing Rim Cuspidor which was also exhibited, is so arranged that it can be connected with an automatic flushing tank that will flush one or more fixtures at certain time intervals, or it can be connected to a push button valve and flush as the valve is operated. It would be more economical to install a line of these cuspidors through the corridors of a large building than it would be to furnish and cleanse the old type of cuspidor, not to mention the great improvement in appearance and sanitation throughout the whole building. The general public have shown more interest in this fixture than anything that has been produced in the plumbing line in years.

SUBSTITUTE FOR LEAD PIPE.

A new lead pipe has been introduced into the plumbing world which has some qualities superior to the ordinary lead piping. The pipe is made of a new mixture of metals, pig-iron and Regulus antimony, thoroughly mixed in certain proportions. The quality depends on the purity of metals used. It is less susceptible to the bad effect of hot water, does not sag, and is least affected by the pounding and crushing to which ordinary plumbing is subjected. Ordinary ½-in. lead pipe weighs 3 lb. per ft. and the new pipe 2 lb. per ft.

Steam Heating and Some of its Wastes

Thomas P. Abbot, in an address Before the Socialist Club at Worcester, Mass., Analyses the Problem of Fuel Wastes and Makes Some Practical Suggestions.

It is surprising how little some of the firemen operating steam heating plants know about the philosophy of heat, the circulation of steam and the adjusting of drafts, checks and dampers, while they know absolutely nothing about adjusting them to the diaphragm by chains and pulleys so as to balance them equally and depend on water to maintain a given pressure of steam, consequently as even a heat as weather will permit.

It is not so much the coal burned that makes the heat, as it is the oxygen consumed, consequently we do not burn so much coal, hour for hour, when we have good zero weather, as we do at freezing or warmer weather if the air is heavy. More coal is consumed with less heat produced when the air is heavy, than when the thermometer registers zero. Usually the colder the temperature the more oxygen in the air, consequently the more intense heat with the same expenditure of coal.

The fire under a boiler is as good a barometer of the weather as one need have if one is at all observing. The approach of a storm is clearly indicated from 12 to 48 hours ahead of time; the minute the air begins to get heavy it is noticeable in the burning of the fire. When the air is heavy better results can be obtained from hard coal; the fire being more open, more air can pour through it, consequently with soft coal a thinner fire attended to oftener will produce the best results. Indifference to atmospheric conditions means a constant waste of fuel that can be overcome by the firemen.

Another waste of fuel comes from the practice of keeping the fire on the hearth of the firebox; no air can pass through it, consequently no heat is produced by it, the coal there being burned by the heat of the fire on the grate. It is a back fire, the result being that the crown shield and door are warped all out of shape. But with the fire always at the edge of the grate, no matter how intense the heat in the firebox, it will not injure the door or crown plate.

Ashes Should Not Accumulate.

The ashes should never be allowed to accumulate under the grate to get nearer than six or eight inches from the grate; to let them pile up under the grate shuts off the draft and burns out the grate.

Since it is the heating surface that determines the horse power of the boiler the tubes and flues should be cleaned frequently, determined by th kind and quality of the coal used. With anthracite they should be cleansed one a week, bituminous makes more soot, therefore, fouls the heating surface and the chimney more. Soot in the chimney absorbs moisture and impairs the draft. Six pounds or so of old zinc cut into pieces three or four inches square and thrown onto a good live hot fire about once a month will clear all the crevices and chimney of soot.

Since the circulation of steam is very essential to the equal distribution of heat the return pipes should be in perfect working order. If the water by the glass gauge keeps dropping during the day, and during the night, when the fire is banked, comes back into the boiler, it is a pretty sure sign that there is an accumulation of rust in the return pipes. In that event shut off the valve between the boiler and blowoff pipe, then blow off the returns into the sewer.

Thus far I have dealt only with the fireman and the waste he is responsible for. Now let us see where the landlord or owner comes in.

Since it is the oxygen we consume that makes the heat, all boilers in cellars where there is no window or door nearly on a level with the firebox of the boiler, should have a draft box from 50 to 300 square inches capacity, according to the capacity of the boiler, so that the air for the fire may be taken directly from outdoors. Otherwise the air is rushing through the crevices of the doors and windows; if it cannot get in that way, you are trying to get heat out of vitiated air, which cannot be done. If outdoor air can get in it makes the cellar cold, and tenants on the first floor must have more heat to overcome the effect thus wasting fuel. But with the draft box the cold air is going directly to the fire where it is needed, and the temperature is always warm and even.

Good Fuel Necessary.

The cheapest coal is the dearest coal to buy, as it contains more refuse and makes more ashes and hard irony clinkers, and in bituminous coal more soot to foul the flues and chimney. The coarser the coal the more air passes through it, consequently the more heat is obtained. The method of mixing chestnut with egg or broken is a false economy. If your fire burns too freely, check it with your drafts, then when the air is heavy give it more draft. This is where hard coal has the advantage over soft, but taking right through the season the soft coal is the most economical, as no more tons of soft will be burned than of hard.

Since the good circulation of steam is essential to the equal distribution of heat, the landlord or agent should see to it that the air-valves are in good working order. The best value is the float valve, and the cheapest value on the market is the best. It is best because the most simple, and absolutely cannot be tampered with by the users. But the float valve should never be put on to a new cast-iron radiator for the first season, as the particles of molding-sand will keep working out and clog the valve, so that the float will not work. The best valve to use for the first season is the open valve, that can be opened or closed at will. The trouble with the open is that the user will leave it open, so that when the steam comes on water will run out and stain the ceiling underneath. On the pipe radiators, the float valve may be used at all times.

The neglect to have good air-valves will waste more coal in a season than it would cost to put on new ones, for if the cold air cannot get out of the radiator, the steam cannot get in, and the fireman will try to overcome the difficulty by burning more fuel.

It is surprising how indifferent the owners are to this waste. It is not two weeks since I was obliged almost to abuse one of my present employers for his neglect that I had pointed out to him more than two months before; then he remedied the trouble to his and my peace of mind. There is no economy in neglecting to terminate remediable wastes when pointed out.

The greatest waste is directly attributable to the tenant or user, and since the woman is in control of the house, it is directly attributable to her. It is not willful and malicious waste, but because she does not know the philosophy —and right here let me say what I should have said under the criticism of the owner. He should have instructions printed and posted near each radiator for the benefit of his tenants. A set might be arranged by some competent person that would apply to all steam-heated houses, and printed in quantities to be supplied at from one to two cents each.

A Practical Demonstration.

Steam, in common with all things, seeks the point of least resistance, and

steam's point of least resistence is where the greatest condensation is taking place. Right here is where the greatest waste is traceable. Where windows are open with the steam on, all the steam rushes to this point, and the tenant is not getting any heat in the rooms where it is needed and windows are not opened. Not only that, but the heat is taken from every other part of the building, and doing no one any good, as it is all going outdoors. To demonstarte this, open the window, top and bttom, and hold a cloth fastened to a stick at the top, it will draw out. Hold it at the bottom. It will draw in. This shows that the heat is rushing out at the top and the cold rushing in at the bottom. Or place two thermometers, one at the top and one at the bottom; it will be found that the top one will register several degrees higher than the bottom one.

It is safe to say that there are not less than 1,000 tons of coal wasted every season in the City of Worcester by the practice of opening windows onto live radiators. It does not matter how wide windows are opened to air rooms, if only the steam be shut off. Each tenant who hears someone rapping for steam, if they will go at once and see that no windows open on live radiators, will save much heat to the other tenants, much fuel for the owner, much anxiety for the fireman, and much bad blood for all, so that the disposition of all will be improved.

Another bad waste is the practice of not snapping the catches when the windows are closed, to shut out the cool air that creeps in there.

Observing these wastes, if you do not get heat while the standpipes are hot, something is the matter with the air valves. At once call the attention of the owner or the fireman. If the standpipes are cold, the fault is in the boiler-room. Then go for the fireman, but do not try to shift the responsibility of your own neglect onto the poor fireman. He is between two fires, the owner for using so much fuel, and the tenants because they are not warm enough.

In all probability, there is wasted in this city, annually, from avoidable causes of firemen, owners and tenants, in the neighborhood of 1,500 to 2,000 tons of coal. Now the fireman who does not understand the cause of wastes, and the fireman who does understand but has not the stamina and courage to tell the owner and tenant of their faults, are not fit to be firing boilers. The owner who does not remedy wastes when pointed out to him, is not deserving of a good fireman, or tenants, good or bad. And tenants who do not remedy wastes they know to be remediable by themselves, do not deserve to live in a heated house—a barn is the place for them.

These facts have not been acquired from books, but by the observations of 25 years' experience, and a little common sense, and the public is welcome to them.

New Ventilation Methods in Chicago Schools

The Chicago Board of Education has Under Consideration a New Type of Building After Which all Future School Edifices Will be Constructed—W. A. Evans, Commissioner of Health, Chicago, in the "Educational Bi-Monthly," Condemns the Present "Down Draft" Type of Ventilation and Makes a Plea for its Elimination in Future Scchool Construction.

Roughly speaking, every child between six and sixteen years of age spends six hours out of each twenty-four for five days of the seven, for ten months of the twelve, in the school room.

The years represent the most importandt of the child's life. He goes in a little over 3 ft. high and weighing about 50 lbs.; he comes out near'y 6 ft. high and weighing 125 lbs.

If the ventilation is not good, several things may happen to children: First, they contract some form of air-bone infection; second, they become pale and lifeless; third, they get headaches; fourth, they become nervous. All of these last suffer both in their physical and mental development, ordinarily.

There are certain principles of ventilation which should be adhered to. No system should ever be adopted which prevents the rooms from being thrown open and aired several times each day. This airing should be by volumes of cold, fresh air directly introduced in strong, blowing currents. A good descriptive phrase is to give the room a good blowing out. We know that a consumptive will do much better in the open where the wind will blow directly over him than he will in a room with the windows thrown full up. Maybe the effect of the strong draft is to blow away harmful chemicals and bacteria. Maybe the better effect is due to oxygen rendered nascent and with bonds made active by the electricity generated by friction.

The inlets and exits for air should be so arranged as to permit of only smallest degree of admixture of the foul and the fresh air. It is not alone that the foul air is full of carbon dioxide and other execretory gaseous substances, but that it contains a bacterial flora which should be led out of the breathing zone as rapidly as possible. The bacteria which one child has coughed, sneezed, or even breathed out should be lifted as rapidly as possible above the breathing zone of the other children.

Another factor of great importance, according to Pflugge, is that the air which has been warmed by contact with the interior of the lungs or the exterior of the body is very harmful when kept in contact with the body.

Another factor of less importance is economy. If you are to furnish 3,000 cu. ft. of air each hour to each of 60 children and the outside temperature is 10 degrees above zero, a great deal of heat will be required. These children, relatively inactive physically and not warmly clothed, will not be able to contribute much heat to warm the air. This large volume of air will not be required if the principle of dilution is abandoned and the principle of direct removal is striven for. When a smaller volume of air is required per pupil, not only is there a saving in heating but there is also a diminution of the force with which the air is delivered in the room.

The heating should be by radiators. In a school room the air as introduced should be heated enough not to feel cold as it strikes the pupils. The remaining requirements of heating should be supplied by coils. The air should be introduced under the seats through ducts having many openings. The exits should be at the ceiling. This, of course, applies only to those few months when the windows cannot be used for ventilation.

L. H. Estano, Moncton, N.B., has sent The Plumber and Steamfitter a copy of a striking calendar showing a gallant husband doing his best to stop the flow from a leak in the supply pipe range boiler connection. On a near-by stool is the housewife trying to escape from the flood.

The Value of Having an Understudy

Have a Helper Who is Ready to Take Your Place When Occasion Warrants—Treatment of Apprentices in the Old Days and Now—What the Plumbing Trade and Correspondence School Does for its Graduates—Competition From Uneducated Plumbers.

Written for The Plumber and Steamfitter by Charles H. Denison.

What is Your "Understudy?"

In many different lines of business all over the world, entirely irrespective of the matter of race, the head of the house has an "understudy." That is to say a person who is educated to the manners and customs of the firm and also to the different details of the business. In some concerns this is carried out to the extent that the head of each department has his own particular "understudy," who is able to step into his superior's place at a moment's notice, the idea being to so arrange the business that it will, so to speak, run itself no matter who may drop out and leave the firm.

By some, this is regarded as a hardship. Take a small-souled narrow-minded man who is full of conceit, and who delights in making a rocky road for his subordinates. Such a party views any system like this with disfavor. Yet, as concerning the best interests of all, and for the purpose of perpetuating business this method of proceeding seems to have its good points.

Observe the heading of this article, you who run the plumbing and heating shops, and note that I did not say who is your understudy or apprentice, but rather what is he? What does he amount to, and are you trying in any way to better his condition? Or, do you figure with this sentiment, "after us the deluge?"

Give Apprentices a Chance

Our forefathers, generations ago, were much wiser, for they gave the apprentice at least half a chance for his life. He may have been misused, and undoubtedly was in many cases; but when his time was served he generally knew his trade, which cannot be said with equal truth of the way things are done in this twentieth century.

From what I have observed during the past twenty years it strikes me that these people who start out to master the craft get "fired" rather than instructed. Now, my friend, some one is going to be running the plumbing and heating business after you have crossed the great divide.

I will admit that many of the present generation of youths are somewhat cheeky in their manners and are sometimes chuck full of impudence and conceit; but that is not their fault. It is partly yours for allowing any such performances, and only proves that you are not man enough to run your own shop. Because you have the power to "fire" any one and so do, can that be called running your business? Why, my friend, that is only the very weakest argument of a mighty poor bunch. The man who can take a bull-headed, conceited, dishonest, or lazy apprentice and so direct him that he emerges finally a decent citizen and a good mechanic, that man knows how to run his business, and does. Such a man is worthy of being called a master plumber or a master fitter, because he makes good the name. It shows no weakness to be kind to your employes. Their gratitude is an asset to your business; their fear or hate causes direct loss. Some years ago it was almost impossible to get any knowledge of the heating or plumbing business except in or from the shop. This is not the case to-day. As the result of the shops "holding tight" whatever knowledge they possessed, schools of plumbing have sprung up in several cities and many correspondence schools give courses in plumbing and heating.

Plumbing Trade School Graduates.

I shall not make the statement that a trade school graduate is capable of running a shop, nor even doing a complete job when he graduates, but I shall say this: give him two years experience in actual business and he will have distanced the boy who came through the shop only, other things being equal. One reason for this is because not one master or journeyman in five does his duty by the apprentice, who many times is treated with as little respect as a dog and merely given enough instruction to enable him to be of muscular assistance. The boy should be taught to use his reasoning faculties and should be given little easy jobs from time to time in order to increase his confidence and obtain an insight to the trade and business. Mr. Plumber, suppose you should "cash in" to-morrow, what would become of your business? Sold, probably, or foreclosed, you answer; for that is what happens too many times to render the thought at all pleasant.

As a matter of self-protection the master owes it to himself to educate thoroughly his apprentice. "What, spread the trade all over God's creation?" cries some narrow-minded guy. "Why there would be a million in the business then." Well, hardly that number, but, see here, tread softly while I mumur that many go into the business anyway, so what's the difference?

Competition of Uneducated Men.

Now here comes the point: Which would you prefer for a competitor in business, a man who knew every point in the game as well as yourself, and who was wise as to figuring costs, etc., or some half-educated party who took his work at any old price? Which of these two competitors is going to hurt your business more? The uneducated man will ruin his own business and yours also, in case you try to meet his figures. The man who is wise to the game will take his work at a profit or else pass it up entirely, for he will refuse to take work merely for the fun of doing it. Therefore, Mr. Plumber or Fitter, it is certainly up to you as to what you will do to or for your apprentice.

Many a good boy has been lost to this trade simply because some hot-headed or narrow-minded master "fired" him in a moment of anger. Others have quit in disgust because they were bright enough to see that they were not receiving a fair show. When a boy comes into your shop and does work for from $3 to $12 per week (and in many cases plenty of work, too, he is paying you by sweat and toil for the money he gets. He, also, is paying for the privilege of receiving instruction regarding the trade, and in many cases this instruction is not forthcoming to the extent of balancing the debt. Therefore, a master who runs a shop upon such principles is not an honorable man. No person is who would cheat his employes, and the master gets the worst of it from any point of view, which, it must be confessed, he richly deserves.

Therefore, my friend, what is your understudy? Have you one at all? or are you merely ambling through your existence like unto a billy goat, hopping down the pike with destination unknown? The goat has a got a hard head and is liable to sudden changes of mind. My telephone bell rang the other day and someone said to me: "Say, I've ceased to be the goat." It was a plumber.

Questions and Answers in Heating and Plumbing

Inquiries Solicited From Readers, Who Run Across Problems Which are Unusual—Just as You are Interested in Reading the Questions Asked by Another Man in Your Trade, so Will the Other Fellow be interested in Your Problems — Send the Queries Along and We'll Answer Them—or try to.

KITCHEN GREASE TRAP.

Editor Plumber and Steamfitter,—Some time ago I was called upon to remedy some troubles in the kitchen of a hotel. Now, among other things I sized matters up that they needed a grease trap on the job and so I put one on. The job does not work right, for the drain to the sink still stops up. Knowing that you have unusual chances for finding out facts in regard to such matters, I write for information and trust to see an answer before long in the columns of the paper. I read the first instalment of Mr. Shade's series and am very much interested.

ST. LAWRENCE.

London, Jan. 15, 1910.

We believe that, in the instance given by our correspondent, there must be a large quantity of hot water flowing almost constantly from the sink. This would keep the grease so hot that it would not have time to harden and therefore it would tend to follow through the trap nearly as readily as water. In such a case as this the grease trap should have a water jacket through which a supply of cold water flows. Otherwise, if the grease were not cooled sufficiently, it would flow into the drain pipe and string out for a considerable distance and harden; thus, in time, stopping up the pipe entirely.

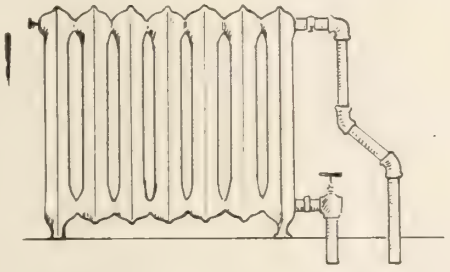
HOT WATER RADIATOR CONNECTIONS.

Editor Plumber and Steamfitter,—Will you kindly inform me if the connections to a hot water radiator (the flow and return) must always be taken from the opposite ends of the radiator? We have had quite a discussion about this matter in our shop and while I do not claim to be an expert, I remember seeing this done somewhere. Nevertheless I would like to have the support of some such reliable authority as your paper and so hope to see an answer in its columns at an early date.

OTTAWA.

Certainly other connections can be made; one of the best known is the "top and bottom connection," and is done as shown in the sketch which we produce for your benefit. The radiator valve in this case is placed on the return, as it is entirely out of the way when so located, and the union ell should be connected into the top of the radiator as shown. The supply should be thrown into the top of the radiator. Special tappings can be ordered from the factory for the radiators and the job placed in the house in this mechanical manner. This form of work makes it much easier for the fitter and contractor, and also gives a better looking job for the customer.

The pipes can be paired very close together when passing to the second story. This avoids running them up on each side of a window in the first story rooms. It also avoids all work done under the floor in the second story, and places the whole piping where it is exposed and can be got at in an easy manner. As far as the circulation is concerned I can state that it is "Johnny on the spot" every time. Try it once and be convinced.



Radiator for hot water heating connected "top and bottom" fashion. The supply thrown into the top and return pipe connection at the bottom. In this way the handle of valve does not project higher than top of radiator, as would be the case were valve on supply as is usual.

WHAT IS A DEAD END?

Editor Plumber and Steamfitter,—I see the term "dead end" sometimes when reading plumbing articles, and while I have an idea as to what this means I have some difficulty in explaining it in a satisfactory manner. Will you kindly give the matter your attention and let me see an answer in your paper at a convenient opportunity?

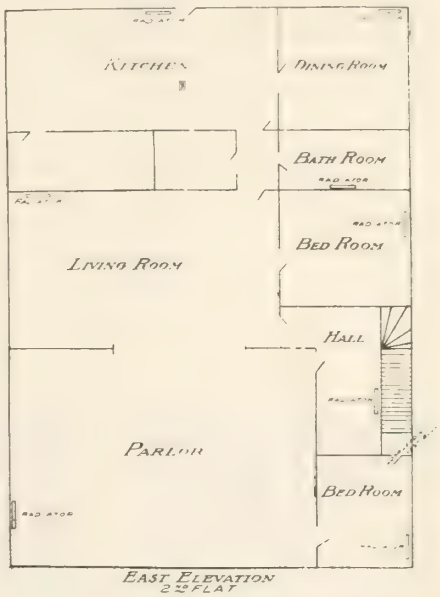
G. B.

When we speak of a "dead end" in plumbing, we refer to any part of the job that the air does not circulate in or the sewage pass through. A job should be so planned as to avoid "dead ends," which may be regarded merely as chambers in which bad odors and gases may accumulate.

A PROBLEM IN DRAFTS.

Editor Plumber and Steamfitter,—Herewith is a plan of a second flat that is heated with hot water. The landlord claims that there is a cold draft when the hall doors are left open, making the flat much more difficult to heat. By placing a thermometer in the hall, I find that it registers the same as in any part of the house. I think that while the drafts can be stopped by closing the hall doors, the flat can be heated easier by leaving them open, as the cold air then has a chance to reach the lowest point, which is at the foot of the stairs. I think that it is the lack of radiation, as the thermometer does not register any higher when the doors are closed. The landlord also claims that the cold air comes up out of the hall, but I would consider this impossible. I would thank some of your readers to solve this problem for me.

A. P. S.



Plan of Flat Heated with Hot Water.

PLUMBING TRADE PATENTS.

The following is a list of Canadian patents granted on Jan. 11, 1910, relating to plumbers' and steamfitters' appliances, and furnished by Fetherstonhaugh & Co., Elgin St., Ottawa:

123149. S. E. Barwis, Altoona, Penn., sewer pipe cleaners.

123172. W. Eisemann, Cleveland, Ohio, hose and pipe couplings.

123180. H. D. C. Harrison, Kingsville, Penn., pipe couplings.

123213. J. C. H. Voelcker, Louisville, Kentucky, faucets.

Value of a Good Plumbing Window Display

A Neat Window Display Gives Possible Customers a Favorable Impression and Helps to Bring Business to the Firm—A Good Show Room Also a Valuable Asset as a Business Bringer

Impressing the investigator with the fact that you have on exhibition a line of the finest plumbing fixtures as well as a line of those used in the closest competition work, goes a long way towards bringing to you numbers of contracts. This investigator was probably drawn into your establishment through your window display which is indeed one of the best advertisements—perhaps second to "satisfied customers"—you can have.

Every property owner at sometime or another needs the services of a master plumber—and every property owner must also walk along the street. It may be that the location of your shop is on one of the principal thoroughfares and the window is glanced upon by at least 75 per cent. of the passersby. In some cases people glance at a window each time they pass it and if the display therein remains the same they become accustomed to the sight and fail to look that way again, or if they do, they do not realize at what they are looking and the name of the establishment leaves their mind perhaps at the very time when you would like them to remember it. But on the other hand if the display is made attractive, if it is something different every now and then, the glance which is made in the first instance is by natural curiosity drawn toward the window [illegible]

establishment is worked upon the brain of the looker-on, so that when the occasion arises to call for the plumber, this person naturally thinks of your window and shop, and in many cases your telephone summons you to do some work.

We see all sorts of window displays—some artistic and attracting, while the majority are so bunched up in appearance that one can hardly make out the idea supposed to be conveyed thereby. It is not necessary that there be a great deal of material used in the fitting up of the window. Sometimes a little does better than a larger amount. It is all in the arranging of the same.

For instance one week a model bath room could be arranged, another week, you could show a line of toilet room accessories; the display of the different plumbing fixtures could be made by showing first a line of closets, then basins, then tubs, etc. Such showings as a model bath room, a model kitchen, laundry, etc., are what attracts the passerby and he will look toward your window each time, just as a lady will look toward the window of a dress goods establishment.

While the arranging of the window display takes time and requires the services of one of your employes who has the nack of placing things where they will show to the greatest advantage, yet it will no doubt prove of more value to the house eventually than if you had no display or a very shabby one, the latter of which will work to the detriment of the concern while none at all will be about one-third the way.

Look to it, therefore, you master plumbers, who have the opportunity of turning this past lost material into cash, and show the public what you are here for, and let them know that you are a live and up-to-date fellow right on the spot with the right kinds of goods.

PURDY-MANSELL'S SHOW ROOM.

One of the largest display rooms maintained by any plumbing firm in Toronto is that of the Purdy-Mansell Company, shown in the accompanying illustration. The front portion, containing the window display is not shown, but the part illustrated shows the thoroughness of the display.

When a customer calls on the Purdy-Mansell Company, he (or she) is taken to the display room and the merits of the various fixtures demonstrated. Everything is clean and bright and the surroundings are such as to give the buyer a favorable impression. Consequently it is comparatively easy to sell high grade fixtures on which the margin of profit is greater than on cheaper goods.

All firms cannot devote such a large space or invest so much capital in a display but every one can make an effort to create a good impression by having as good a display in his window and shop as his business possibilities warrant.

Plumbing Show Room of the Purdy-Mansell Company, Albert Street, Toronto.

Winnipeg to Have New Plumbing By-laws

New Code Drafted and About Ready for Final Adoption — License Fee Reduced—Inferior Taps and Valves — Vents Between Sewer and House Trap Not Compulsory — Examinations Claimed to be Unnecessary.

WINNIPEG PLUMBING BY-LAWS.

For the past two years an endeavor has been made at Winnipeg to draft plumbing by-laws which would be acceptable to all parties concerned. The chief factors in these compilations have been plumbing inspector J. Smith, R. G. Wilson, Assistant City Engineer, Dr. Douglas, city medical health officer, William Bruce, president of the sanitary association, and two representatives from the master plumbers. At the meeting of the fire, water and light committee in the city hall, on the evening of January 17, it is believed that the last amendments and suggestions affecting the by-laws have been offered and they are at present in the city solicitor's hands undergoing final revision.

One of the most important features of the new by-law is that all master plumbers will be compelled to register, and take out annual licenses. It was due to Robert Thomson, of Thomson & Horner, who represented the master plumbers at the last meeting, that the registration fee was reduced from ten dolars to one dollar. He expressed the opinion that it would be unfair to place a tax on the plumbers as other business men did not have to pay similar fees, and as also the plumbers had to pay a fee for the testing of their work.

Another suggestion which was made by Mr. Thomson, but was not acted upon was in connection with inferior taps and valves and other supplies offered for sale in Winnipeg. He claimed that this was the reason for the high cost of plumbing and repairs. His idea was that all taps and valves should be tested by a city plant and stamped before being offered for sale. The civic committee, however, considered it sufficient that they be tested by the plumbing inspector.

The sanitary association representative asked to have the instalation of house traps complusory, and that provision be made to have a ventilating pipe between the sewer and the house trap. The committee considered this matter superfluous and left it optional whether they should be installed or not.

The committee will meet to pass the by-laws in their final form on Monday, January 31, after which time all future plumbing will be done on a new and much more radical basis than ever before. Plumbing inspector J. Smith has spent many months studying plumbing by-laws enforced in almost all the American cities. From these he has collected the most valuable points and added to them where necessary in order that local conditions might be met. He said: "I am aware that the standard of plumbing has been altogether too low for this city and it will be my duty to raise it at any cost and I can only do so insofar as I have the support of the by-laws."

When asked as to his opinion of having examination for plumbers, he replied: "Those by-laws are my answer. I believe that the same results can be secured by enforcing by-laws that are just and right, and it is possible that some contracting plumbers in this city will have to replenish their trade simply because of their incompetency to live up to the by-laws which will have to be enforced to the letter."

AMENDMENTS TO NEW WESTMINSTER BY-LAWS.

In October last the following amendments were made to the plumbing by-law adopted by the city of New Westminster in 1906.

1. Section 39 of the Plumbers and Plumbing Regulation By-law, 1906, is hereby amended by striking out the words "All sinks shall be provided with approved grease traps" in the third line thereof.

2. The said Plumbers and Plumbing Regulation By-law, 1906, is hereby amended by adding after section 50 thereof the following :—

(50a) All plumbing and drainage work to be done in buildings to be connected with what is to be known as the Columbia Street Sewer, shall be connected in the following manner :—

On the inside of the basement wall, or street line, place a House Trap, (the same size as the house drain), the Trap to have a 3" seal, with a "Y" branch left off on the sewer side of the trap, with a clean-out in same, so that in same, so that in case of the sewer connection becoming blocked a cable can be run down from this "Y" connection to clear same.

On the house side of the trap, place a "T" to be used only for fresh air inlet, this inlet to extend to the outer air, with grating on same.

All leader or rain water pipes to be connected with the main house drain, said leader or rain pipe to be of cast iron with all joints calked with lead and oakum, all to be tested with the other plumbing work.

Connect all cellar drains with main house drain, said drain to have cast iron cellar drain traps placed at each opening, said trap to be properly vented in accordance with this By-law.

Whenever a change of direction is made in either sewer, soil or waste connections a "Y" must be used, with a clean-out in same.

3. Section 3 of the Plumbers and Plumbing Regulation By-law 1906, Amendment by-law 1909 is hereby amended by adding at the end thereof the following :—

All branch connections in soil or waste pipes to be made with "Y's" and $\frac{1}{8}$" bends.

ABUSE OF PLUMBING FIXTURES.

The difficulty which frequently confronts an inventor, points out Modern Sanitation, is to make the article of his invention "fool proof." In like manner the manufacturer is compelled to take into consideration means to make his product "abuse proof." One is almost as impossible to accomplish as the other.

In the case of the manufacturer of plumbing fixtures, what, other than common sense, can persuade the plumbing contractor not to deliver fixtures on the jobs until it is actually time to install them, and, when they are delivered, not to uncrate or unpack them until his journeyman is right to the point of setting them in place?

If they are delivered to the jobs and unerated before they are needed, what is to prevent the plasterer, the carpenter, the setter or the electrician from dragging them across the rough floor to move them out of his way, or to use them as receptacles for his tools, to make them do the duty of a stepladder, to accidentally spill acid on them or occasionally to drop a hammer on them?

No manufacturer can successfully cope with such contingencies; nevertheless, these things happen every day, and, as a result, the manufacturer has his goods roundly condemned and is called upon to make good in thousands of cases where there is no moral right whatever to call upon him. All this could be avoided by employing the proper care and consideration.

Very commonly the trouble is due to lack of close supervision or to a mistaken idea on the part of the foreman plumber of the necessity of excessively early delivery of fixtures to the building. Indifference also is unfortunately a factor. In this connection it is well to refer to the early stage in the lofty building construction that the plumber comes on the job. With the bare steel columns may be seen the water, waste and vent pipes rising perpendicularly.

Gossip of the Plumbing and Heating Trade

Items Gathered in all Parts of Canada—Letters Invited From Subscribers, Giving Particulars Regarding Changes in Firm Names, Contracts Secured, Novel Methods of Advertising or Other News—Photos of Anyone or Anything Connected With the Trade Also Welcomed.

W. H. Chalmers & Co., plumbers, Montreal, have assigned.

Scott Bros., tinsmiths and stove dealers, Hamilton, have assigned.

Joseph Belisle & Frere, plumbers, Montreal, have been registered.

Prince Albert, Sask., will appoint a sanitary inspector at $75 a month.

J. W. Suddard, of Le Touzel & Suddard, tinsmiths, Gaspe, Que., is dead.

Mrs. L. E. Holmes, tinsmith, Russell, is succeeded by Thos. G. Holmes & Son.

The Hamilton Board of Health will ask for the appointment of a plumbing inspector.

The new filtering plant near the St. Maurice bridge, Three Rivers, will soon be completed.

Both members of the Stanton & Mitchell plumbing firm, Hamilton, were in Toronto last week.

J. S. Allen, Burlington, Ont., has been re-elected water commissioner of that place by acclamation.

C. A. Lusby, of the Amherst Foundry Co., Amherst, N.S., is paying a business visit to Toronto at present.

Charles Baker, plumber and tinsmith, Prescott, was elected a councillor in the recent municipal elections.

Clark & Crawford, plumbers, Niagara Falls, have dissolved and the firm will be carried on by G. H. Clark.

The Sanitary Plumbing Mfg. Co., Granby, Que., has been registered with Edward Bradford as manager.

Hayward & Dods, plumbers, Victoria, have moved their place of business from 759 Fort St. to 923 Fort St.

Only licensed contractors will be allowed to undertake sewerage construction work in Winnipeg in future.

Dr. Sheard, Medical Health Officer, addressed the Toronto Plumbers' Union on Sanitation one night last week.

W. C. Helliwell, manager of the Winnipeg branch of the Gurney Foundry Co., is spending a fortnight in Toronto.

Charles D. Kirk, Winnipeg, Man., has been accepted as a member of the American Society of Heating and Ventilating Engineers.

Representatives of the Dominion Natural Gas Company have asked the Tillsonburg town council for a franchise [illegible]

J. E. Blanchard & Fils, plumbers, Montreal, have dissolved, and J. E. Blanchard & Co. have been registered to carry on the business.

A. D. MacArthur, Ontario representative of the Standard Ideal Mfg. Co., Port Hope, has returned to his Toronto home from a three-weeks' visit to Cuba.

R. H. Ballantyne, steamfitter and plumber, with Tipper & Sons, Brantford, for the past nine years, has severed his connection and will enter business for himself.

James H. McAvity, a member of T. McAvity & Sons, brass and iron founders, St. John, died at that place on January 16. Mr. McAvity was in his 73rd year.

Brockville's waterworks system showed a gross gain for the past year of $7,800, and when debentures and sinking funds were paid, a net profit of $716 remains.

There is a scarcity of plumbers at Welland, owing to the rush of work there now. With splendid prospects for the year, the plumbers there will be kept on a rush.

H. T. Bush, president and managing director of the Standard Ideal Mfg. Co., Port Hope, has gone this week to Amherst, N.S., to look over the plant of the Amherst foundry.

William A. Fraser, president of the Detroit Brass Works, died recently at St. Augustine, Fla., following an illness of several months. He was 52 years old. He went to Detroit in 1892 from Wallaceburg, Ont.

The St. Thomas water works department made a net surplus of $9,136.09 for 1909; and pumped 511,793,365 gallons of water. The meter rate is 10 cents per hundred cubic feet.

Will Rose, salesman for Vantuyl & Fairbank, Petrolea, for the past seven years, has accepted a situation with the Gurney Foundry Co., Toronto, as traveler in western Ontario.

The plumbing and drainage branch of the Toronto Medical Health Department during the year 1909 issued permits for work to 6,421 buildings, this being 33 per cent. increase over the previous year.

Phillips & Co., Orillia, have secured the contract for instaling nine complete lavatories in the Tudhope Carriage Co.'s new factory. They have just completed installing plumbing in the Empress hotel and J. D. Brown's summer hotel at Gravenhurst.

Hodgson & Stearman, plumbers and hardwaremen, 546 Granville street, Vancouver, have dissolved partnership. R. C. Hodgson has taken over the plumbing and heating branch of the business, which will be continued at 643 Seymour street, that city.

W. S. Ramsay, Vancouver, has secured the complete heating, plumbing and electric lighting contracts for the large apartment house now in course of erection for Hector Macpherson, on Howe St., and for Mr. Arthur's private residence at Fairview.

H. E. Johnson, eastern representative of the Canadian Wolverine Co., Chatham, who has been dangerously ill at his home in Toronto, for the past six weeks, suffering with gastric ulcers, is now on the mend and expects to commence working his territory early in February.

Local No. 496 U. A., which is composed of Calgary plumbers and steamfitters, installed the following officers recently: President, C. Purchase; vice-pres., W. A. Laraway; financial secretary and treasurer, A. Milligan; recording secretary, J. W. Jenkinson; business agent, E. S. Morton.

Mr. Eaton, of the International Heating & Lighting Co., spent a few days in Port Arthur recently. Mr. Eaton is strong on gas for Port Arthur and Fort William, and he is of the opinion that his is the company that should be given the franchise for the installation of the gas in the two cities.

W. F. Martin, late of Bennett & Son's plumbing department, Gananoque, has purchased the plumbing and steamfitting business carried on there for some time past by Gordon Latham. Mr. Martin has had a wide experience in this line of business, having some years ago been a partner with Mr. Latham.

Two houses, Nos. 276 and 278 La Salle St., Montreal, which have been unoccupied for some time, were visited by thieves, who broke up all the plumbing, carried away about $200 worth, and caused damage amounting to about four times that amount, as they let the water run through the house. They have not been caught.

A. E. Law, for the past four years connected with the hardware establishment of Harry Lendon, at Leamington, Ont., has purchased the tinsmithing and plumbing business of C. A. Willits & Co. of the same place. Mr. Willits has been conducting the business only a

short time, having purchased originally from Fred A. Mettam.

The Galt Electric and Gas Fixtures Company, controlled by R. G. Struthers and E. B. Fewings, have completed the erection of a two-storey building on Queen street, Galt, and within a few days the new factory will be in full operation. The company supplies electric and gas fixtures to retailers throughout Canada and employs from 15 to 20 men.

Water Commissioner W. H. Westman, of Chatham, Ont., has given notice of a by-law to abolish the present minimum rate of $1.15 per quarter to patrons taking their water supply by meter, charging instead only for the actual amount of water used. The change will probably boom the meter business. The department contemplates purchasing meters in large lots and installing them at actual cost.

The annual meeting of the Amherst Foundry Co. will be held early in February at which it is understood the matter of amalgamation with the Standard Ideal Mfg. Co. will be discussed in detail. The withholding of the judgment in the case of the Standard Sanitary Mfg. Co. vs. Standard Ideal Mfg. Co. re use of the word "Standard" is said to have delayed the closing up of the merger project.

The Sherbrooke Water Department has had a successful year. The average consumption of water during the last three years is as follows: in 1907, 1,520,358 imp. gals.; in 1908, 1,501,776 imp. gals.; in 1909, 1,495,724 imp. gals., a decrease of 25,000 gals. per day since 1907, notwithstanding the 234 new services, due principally to the installation of meters which have been placed in factories and hotels.

Frank P. Draper, one of the best-known travelers in the eastern townships of Quebec, died at his home in Montreal a few days ago. He was born fifty-four years ago in Waterloo, Que., and for many years conducted a successful hardware, plumbing and heating business at Sutton, Que. For the last fifteen years he was traveling manager of the eastern Canada business of Clare Bros. & Co., stove founders, Preston, Ont. He was widely known as a furnace expert.

A deputation from the Trades and Labor Councils has requested the Hamilton Board of Control to appoint a plumbing inspector. They claim that because there was no inspector, Hamilton has been made a dumping ground for shoddy plumbers' supplies, and boys were put to do work that should be done by journeymen. The city has grown so large that the building inspector is not able to perform the duties of his office and also those of plumbing inspector.

Henry H. Taylor, of Kingston's board of health, is endeavoring to have a plumbing inspector appointed for that city, and at the last meeting of the board, brought up the matter. It is to be discussed at a later meeting, and there is a probability of a man being appointed for this position. Men have been offering to do the inspection for the fees alone, but Mr. Taylor is of the opinion that this would be too much, as the fees this year, would likely amount to $1,800 or perhaps $2,000.

After reading the account of the fire at St. Clair Avenue School, Toronto, H. C. Stork, of Brampton, suggests that the schools be heated with hot water or steam, and that the boilers be placed in a building at the back of the school, and the hot water or steam pipes be carried from there through the main building. This would do away with fire in the building altogether. He says that 75 per cent. of the fires in the schools originate from the heating apparatus being in the building, generally in the basement.

The temporary purifying plant installed for the Montreal Water & Power Co. has been completed, and is in operation. By means of this process, which consists of two tanks containing the purifying solutions, the water passing through the pipes of the company will be treated so that all impurities will be eradicated. By this means the further spread of the typhoid epidemic will be checked so far as is possible. This new means of purifying the water will, in all probability, be continued until the filtration plant, now in course of construction, has been completed and is in operation.

A rush message to John Burns, of Montreal, one night recently that something was wrong with a furnace in a large residence in the west end of that city, caused the immediate dispatch of a man to the place in question. The employe soon after telephoned: "No water in furnace, furnace section washers burnt to a crisp, valve of cistern that supplies water to furnace choked by a fish about three and a half inches long, being lodged in it." The repairs cost the citizen about $47. And yet they say that Montreal water does not need filtration. What with fish and germs, the water must be an interesting study to all students of nature.

A delightful euchre and dance was given by the Master Plumbers of Montreal, at the Majestic Hall. There were over 220 present, and the evening was declared to be the most enjoyable ever spent under the auspices of the local association. The committee of management comprised: H. Munday, chairman; J. Watson, J. Laurier, J. Walsh, P. C. Ogilvie, M. Quigley, W. David, J. Whitty, J. Gordon and J. Thibeault. Eight handsome prizes were given for the euchre, and keen enthusiasm was displayed by the players. After supper dancing was indulged in. The evening was a financial as well as a social success, and the committee were congratulated on all sides for their efforts.

The Winnipeg civic fire, water and light committee held a special session a few nights ago and heard opinions of architects, master plumbers and sanitary and health experts about the clauses contained in a draft of a new plumbing by-law for Winnipeg. One of the features of the proposed by-law was the provision for registration of all master plumbers and the payment of a license fee in connection therewith. Among those present were: William Bruce, president of the Winnipeg Sanitary Association; Robert Thompson, and several other master plumbers; W. J. Smith, city plumbing inspector; R. D. Wilson, acting city engineer; E. H. Rodgers, city building inspector; Dr. A. J. Douglas, medical health superintendent and others.

The annual report of Plumbing Inspector James Jacques, of Ottawa, just issued on inspections made in that city for the twelve months ending October 31, 1909, shows that 3,425 examinations were made during the year and also makes several recommendations of changes in the regulations governing plumbing. The report goes on to recommend that all pipes for vents should be of galvanized iron and that all journeymen plumbers should be required to register at the health office as competent workmen before being granted a linense. At present apprentices can make an application and receive a license to do plumbing when they are not competent. Mr. Jacques also makes application for an assistant inspector as he has found it impossible to keep up with the increased work of his department.

Rev. W. W. Lodge, pastor of Exmouth Street Methodist Church, St. John, experienced a remarkably close escape cape from serious injury or death a few days ago. The explosion of a hot water boiler in the kitchen of the Exmouth Streeet parsonage occurred just after he had passed out of the door, and while he was still not more than twelve feet away from it. The explosion drove the steel boiler about the room in small sections, portions of it flying through the double windows on the other side of the room, and landing far out in the areaway. The top was blown from the kitchen range,

and the room was badly wrecked by the flying pieces of metal. The clergyman lit the fire without knowing that the water had frozen solid in the boiler during the night. When the heat reached the mass of ice, it expanded and the physical result followed. After setting the fire alight Rev. Mr. Lodge employed himself about the kitchen for a minute or two, and then left the room. He had just reached the door going to it from a position about two feet away from the boiler, when the explosion occurred, and pieces of the stove and boiler struck the walls a foot from him.

NEW LAVATORIES AT TORONTO.

City Engineer Rust, of Toronto, in his estimates for 1910 has asked for $53,000 to build and equip a number of new public lavatories. The following is a list of the stations: Broadview avenue, to complete, $1,000; King street and Roncesvalles avenue, $10,000; College street and Spadina avenue, $10,000; Bloor street and Sherbourne street, $8,000; Brock avenue and Dundas street, $8,000; Dufferin street and Lansdowne avenue, $8,000; Dundas street and Keele street, $8,000.

With the exception of the lavatory at Dundas and Keele street, all these proposed convenience stations will be built underground. The Junction lavatory would be an underground station, too, but for the fact that the sewer is high at that point.

NEW 1910 CALENDARS.

The Empire Mfg. Co., London, manufacturers of plumbers' and steamfitters' supplies and brass work, has issued an artistic and useful calendar. The useful part has the dates set in large figures, which are easily read when hung on the wall of room or office, and the days are numbered right through the year. For instance, a glance at the calendar shows that Wednesday, September 7, is the 250th day of the year. The top part of the calendar shows a color-type reproduction from an original painting by W. Verplanck Birney, which was exhibited in the National Academy, New York, in 1908, entitled "Where the Fox Ran." It depicts an old squire and his neighbors just returned from a ride behind the hounds discussing over a map of the shire the events of the chase. The colors and settings of the characters are very lifelike and the picture itself is worth preserving.

The Keewanee Water Supply Co., Keewanee, Ill., are distributing a wall hanger of an artistic design. The company makes an air pressure water supply system for country homes, whereby these homes may have the same conveniences as houses in the city. The illustration shows a gentleman in neat white clothes watering the flower beds in front of his country home. The house is shown so that the interior is visible —the kitchen with range, hot water heater, sink and pipe, and above that the bathroom, showing bath, closet and lavatory. In the basement is the pumping machinery with the underground tank peeping through the wall. The whole is very suggestive and striking. The colors used in the illustration are natural and artistic, and the whole makes a pretty picture indeed.

E. T. Needham, 1167 Dundas Street, Toronto, has remembered The Plumber and Steamfitter with one of his 1910 calendars, it showing a young lady having a conversation at a desk phone.

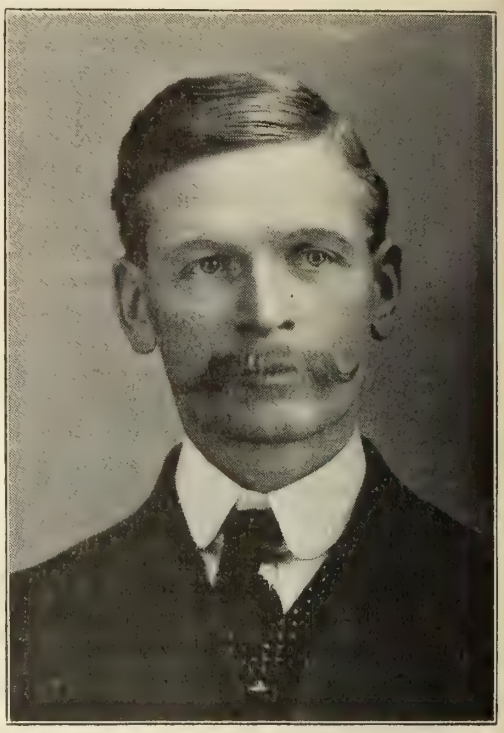
CHARLES F. SMALLPIECE,
Recently appointed manager of the Montreal branch of the Taylor-Forbes Co., Guelph.

UNIVERSAL SEWER ROD.

A valuable article for plumbers called upon to open stopped waste pipes, is the Universal sewer rod, made by the Canadian Wolverine Co., Chatham, Ont. The rod consists of a strong, flexible wire cable, on which are strung hardwood balls with a spring device provided at one end to keep the balls in proper alignment, and yet allow sufficient play to permit the flexible rod to turn around curves in the piping readily. The rod is brought into action by holding the spring and pushing it through the pipe. Should one sewer rod not be of sufficient length a coupling is provided, so that additional rods can be added to reach the obstruction at a considerable distance from the opening in a drain pipe. The barbs on one end of the rod are designed to engage any foreign substance, such as lint and rags, which can be withdrawn from the drain pipe by pulling the rod back.

PLUMBER SEEKS ELECTION.

Two prominent Montreal master plumbers are contesting for civic honors, P. C. Ogilvie and Thos. O'Connell. The latter is a retiring member of the old council. Plumbers generally are heartily supporting these two candidates. Montreal is in need of drastic reform in almost every direction of civic government, but none more so than in the water supply, and sanitation. We have only to instance the typhoid epidemic to show how serious things are.



P. C. OGILVIE, MONTREAL,
Chairman of the Sanitary Committee of the National Association of Master Plumbers, Who is Standing for Civic Honors in Montreal.

As Mr. Ogilvie said in his letter of candidature, "It is desirable and essential that practical men should be on the committees of the City Council to give their colleagues the benefit of their knowledge when subjects on which they are experts are under discussion. Take for instance the sanitary laws and the water supply of the city, two of the most vital matters concerning the health and welfare of the citizens. These subjects are brought forward from time to time in the council and are discussed and settled by men who have little or no practical knowledge of them." This is especially true of Montreal, and the city should have experts like Messrs. Ogilvie and O'Connell to deal with these questions.

New Buildings, Water and Sewerage Systems

Opportunities Offered by Municipalities and Private Enterprise for New Plumbing, Heating, Ventilating or Sanitary Systems—Work Being Undertaken in Every Section of the Dominion.

Municipal Undertakings.

Regina will construct a $363,000 trunk sewer.

The New Westminster council will advertise for new tenders for the city incinerator.

City Engineer Rust, of Toronto, has asked in his estimates for 1910 for $225,-151 for new fire mains.

J. Galt, consulting engineer, has reported in favor of a project to instal a gravity system water supply at Edmonton.

City Engineer Rust, of Toronto, plans to give work to hundreds of men by constructing nine new large sewers by day labor.

The Ottawa city council has appointed a committee to go into the question of the method and cost of providing public lavatories in various parts of the city.

The Hamilton Works Committee passed estimates amounting to $356,000. Among other items were: sewers, $11,-150; waterworks expenses, $65,250; sewage disposal, $19,154; waterworks construction, $94,000.

A tunnel under The Narrows is the solution that Engineer H. M. Burwell sees in the difficulty that will arise when the increasing sea-going traffic of that port and the dredging of the Narrows require some other disposition of the Capilano creek water main than the resting place on the bed of the Inlet.

City Engineer Childs, of Calgary, has advised that city's commissioners that another $10,000 will be required to complete the gravity system of waterworks, but it will not be an extra charge on the ratepayers because of the fact that the system was installed at approximately $52,000 less than was at first anticipated.

A deputation, consisting of City Engineer Clement, Ald. McSpadden and others from Vancouver waited on the Hon. F. C. Carter-Cotton and Attorney-General Bowser to request them to use their influence with the provincial government to have the latter construct a large sewer along Nanaimo street, at the city boundary, to Burrard inlet.

Tenders for water pipe, approximating over $30,000, were awarded by the Vancouver Water Committee. Evans, Coleman & Evans, and Robertson, Godson & Co., were the successful firms, the former for the steel pipe and the latter for the cast iron. The figures in the respective cases were $24,499.20 and $8,477.50. Delivery of the steel pipe is to commence on May 20, while the cast iron pipe will be delivered in April.

The Richmond, B.C., water agreement, whereby New Westminster agrees to supply the neighboring municipality with water has been signed. For $125,000 the city of New Westminster agrees to connect the reservoir at Queen's Park, by a 24-inch steel pipe with the city's waterworks system at Coquitlam lake, and to lay a 12-inch steel pipe from the reservoir to a point near the westerly end of Lulu island, whence the water will be conveyed to the different parts of the municipality of Richmond. Work will probably be started immediately.

General Building.

R. I. Gold, Lethbridge, is erecting a $3,000 residence.

W. Oliver, Lethbridge will build a five storey business block in the spring.

Henry Gillespie, Brandon, will erect a $5,000 residence and has taken out a permit.

It is reported that an apartment house will be erected at Bloor and Spadina, Toronto.

Plans are being prepared for an eight-storey Chamber of Commerce building at Edmonton.

The Baptist church at Cobalt has bought a site on which the congregation expect to erect a church building next summer.

F. M. Crapper, Regina, will have two buildings erected. One is to be a large business block, and the other a two-storey brick structure.

The Westminster Trust Company are erecting a three-story cement block building at Chilliwack. The building will have hot water heating.

A building permit for an eight storey steel frame structure at Vancouver has been taken out by Miss R. Leigh Spencer, to cost $80,000.

Plans are being prepared by W. W. Blair, for the large apartment house to be erected by G. H. Walton, at Winnipeg. Estimated cost, $320,000.

The Dominion Trust Co. are to erect an office structure at Victoria. The building will be six storeys in front and eight in the rear and will cost $150,000.

The Presbyterian Church in Canada's Mission to the Jews will erect a new building, specially adapted for the work, at Toronto, at an estimated cost of $35,600.

The Delatre street school at Woodstock, Ont., will cost $15,197, exclusive of the heating and plumbing systems. The contract for this school was let to Geo. Adams.

A building permit has been granted Queen Street, Ottawa. The estimated cost is $25,000. The permit was granted to W. H. George, architect. John A. and H. Brouse, are the owners.

Building permits have been issued at Victoria recently to Henry Young & Co. for alterations to premises, $3,000; Ian Epperson for a dwelling, $2,000; and to Alex. McCrimmon for a house to cost $2,500.

The New Westminster hospital board will call for competitive plans for the new hospital. The proposed hospital will cost in the neighborhood of $100,-000 and must be designed to accomodate about 100 patients.

The Canadian Pacific Railway Co., which some time ago bought the St. Lawrence Hall property at Montreal, has decided to pull the building down on March 1 and to erect a new building for the Dominion Express Co.

J. Berridge & Co., Toronto have been awarded the contract for a large residence for Mr. Bertram to cost $7,000. The same company have been awarded the contract for the erection of additions to apartments at Gloucester and Church streets, Toronto.

Recent building permits at Montreal include: D. Murray, house, $4,500; A. Lusignan, house, $3,500; F. L. Desaulniers, house, $4,000; L. P. Damphousse, house, $4,000; F. X. Craig, store and dwelling, $5,000; Dubec & Chateauvert, house, $4,000.

Richard T. Perry has just completed plans for two six-roomed bungalows to be erected at South Vancouver. The contract has been let to Domoney & Abbot. The same architect has let the contracts for an eight-roomed bungalow to be erected at Cedar Cottage, to Orenden & Braithwaite.

The revised plans for the new St. Paul's Church at Toronto, were adopted at a special meeting of the Vestry. The estimated cost of the new edifice is $231,000, of which sum over $150,000 has already been contributed. The building will be one of the handsomest in Canada.

The incorporation of Cosey Homes Welland, to build desirable homes for workingmen in Welland was announced last week. The directors are David Ross, Gordon Ross, B. J. McCormick, Welland; B. D. Cady, Fred W. Moore, Port Huron, Mich. They will erect a large number of houses this summer.

The contract for tearing down the old section of the Beale school at Woodstock, Ont., and for erecting in its place a four-roomed addition was let to the firm of Nagle & Mills of Ingersoll, whose bulk tender of $11,054, was the lowest of the several tenders received. This figure includes the entire work on the building, with the exception of the instalation of the heating and plumbing systems, which will be dealt with later.

Recent building permits at Vancouver include: J. Brown, $2,000; Capt. A. Cooper, $3,500; Arbuthnot Sash & Door Company, $2,600; W. L. Carley, $2,600; I. Russell, $4,000; A. J. Coles, $2,000; N. J. McArthur, $2,500; G. Tyson, $2,000; G. H. Eaton, $2,300; Stevenson & Doctor, $3,000; S. Irwin, $3,000; B. C. Mattress Company, factory, $8,000; D. A. Acorn, dwelling, $3,500; W. G. Hetherington, dwelling, $12,000;

F. Graham, three dwellings, $4,200; J. Brown, shop, $2,000.

Recent Toronto permits include: J. T. & H. H. Hutson, pair of semi-detached 2-storey dwellings, $15,000; A. H. Garrett, six attached 3-storey stores and dwellings, $14,000; D. Montana, 4 attached 3-storey stores and dwellings, $16,000; J. K. Fisken, 4-storey factory, $11,000; Ralph King, 2-storey-and-attic dwelling, $10,000; K. & S. McWhinney, 10 pair semi-detached 2-storey dwellings, $17,000; 4 pair semi-detached 2-storey dwellings, $16,000; C. Garfunkel, 2 detached 2½-storey dwellings, $10,000; Canada Foundry Co., alteration and addition to warehouse, King street subway, $12,000; Deeth & Sons, 7 attached 2-storey brick dwellings, near Dufferin, on north side Fisher, $10,000.

Public Buildings.

The Yorkton, Sask., town council have decided to increase the fire hall accommodation.

Poirier Bros. have been awarded the contract to build the new school house at St. Albert, Alta.

The $100,000 Collegiate now in course of construction for Port Arthur is rapidly nearing completion.

The Toronto Separate School Board passed a by-law to raise $75,000 for the erection of school buildings.

City Architect Nutter, of London, has been asked to prepare plans at once for the Colborne street school there.

The congregation of Valleyfield (Que.) Presbyterian church has decided to build a church hall and school at a cost of $8,000.

It has been decided by the Saskatoon high school board to install an automatic temperature regulator system at a cost of something like $3,000.

Winnipeg ratepayers have approved of spending $50,000 on fire halls and $215,402 on new police stations, as well as $50,000 for a new bath house.

The Port Arthur Board of Education have decided to double the capacity of the north ward school at an approximate cost of $18,000 to $20,000.

The Ottawa Methodist Social Union has plans for the erection of two new churches in the coming year, one on the Glebe and the other in Ottawa South.

Wellington Street Church, Brantford, intend renovating and improving their building. Plans have been practically completed, and tenders will shortly be called.

Superintendent Bishop, of Toronto's Board of Education, has been asked to prepare plans for the new Technical school there, of which the estimated cost is $500,000.

Of the three by-laws submitted to the Victoria ratepayers last week, only one received the three-fifths majority necessary to enable them to carry. This one was the grant of $184,000 to build a new school.

The following are some of the items being considered by the Brandon, Man., council: To consider the advisability of needed improvement to the city hall and opera house and the improvement of the heating system.

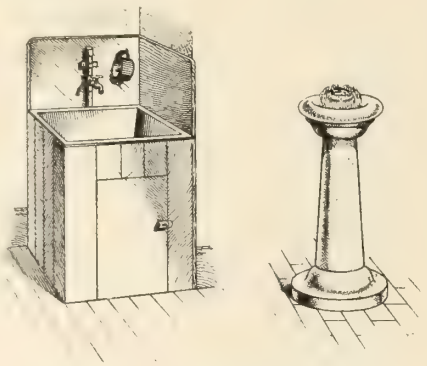
It is stated that the B.C. provincial government has promised to erect a new court house at Revelstoke, this year at a cost of $100,000, and to consider establishing a land registry office.

The Emmanuel Anglican College has secured a site at Regina for the erection of a college. Brown & Co., the university architects, were awarded the contracts for the plans. A $50,000 building is to be erected in the spring.

A syndicate recently formed is contemplating the construction of a modern theatre in Saint Roches, Quebec, and already negotiations are being conducted for the purchase of a site. The new theatre will be a modern building, and will cost in the neighborhood of $30,000.

DRINKING FOUNTAINS FOR SCHOOLS.

Little argument is needed to demonstrate the superior sanitary qualifications of the modern drinking fountain for the use of school children as compared with the old sink with its faucet and tin cup



Old and New Drinking Fountains.

after even a passing observation is made of the accompanying pictures which have been reproduced from the bulletin of the Michigan State Department of Health.

In many places the sink and faucet with its tin cup are still in use, and frequently the sink is enclosed and in the closet thus made are kept the scrub and dust brushes and other paraphernalia for cleaning used by the janitor and which are seldom used for cleaning the closet. These various articles frequently bring a collection of dust and whatever it may contain to accumulate and serve as a possible menace to the school children. The faucet is a temptation to skylarking by the children with the attending disadvantgages, to say nothing of the possibility of a leaky faucet causing a waste of water and overflow of the sink, which may make the schoolroom floor sodden for some time.

There is an opportunity for the plumber in any community to call the attention of the school board and those who send their children to school to these drawbacks. Such information spread broadly will secure the order for him to replace the sink with a drinking fountain by means of which a larger number of children can quench their thirst without the possibility of any of them being subjected to a shower at the hands of some mischevious youngster.

The modern fountain is so constructed that it takes both hands to operate it and consequently a spray cannot be thrown by the use of the finger in compressing the water at the orifice. The modern drinking fountain assures every user a fresh and absolutely clean drink without contact with anything that is not continually flushed with water.—Metal Worker.

DANGERS OF HIGH PRESSURE.

The danger of putting hot water heating systems under high pressure is demonstrated by an accident which was thought to be of sufficient importance to be investigated by the English Government. It developed that while a school was in session an examination and test of the heating system were being made. The system, it is stated, had frequently been put under a pressure of one ton. When a pressure of 1,800 lbs. was obtained on this occasion a rupture in one of the pipes occurred and caused the death of one of the pupils, the injury of the teacher and several others. In the United States the open expansion tank system enjoys the widest favor, although circulation through the radiators in some systems is improved by attaching devices which partake of the nature of safety valves while putting the system under a sufficient pressure to develop a higher temperature for the water circulating through it than would be possible if an open expansion tank were used.

Between now and June, Kingston plumbers will have to put sanitary improvements in between 500 and 600 houses, in order that the board of health order, prohibiting the use of privy vaults, may be obeyed. As a result they will have a very busy time, and the city engineer's department will be worked to the very limit, as an inspection has to be made of every place for which a permit is issued. The city engineer says that there is work enough for an inspector, and for some time has advocated very strongly for one. He points out that his office has not the time to look after this matter without neglecting its own work. The department is willing enough to do the work if time was found, but as the engineer also points out, there is a limit to the amount of work which can be done. In his opinion a plumbing inspector should be appointed at once.

PLUMBING AND HEATING MARKETS

MONTREAL.

Jan. 30.—Although trade except in a few lines is on the quiet side, there is an excellent tone all the way round. Supply houses are making preparations for a very heavy demand, and the opinion is openly expressed that the fall, if not before, will see a general shortage all the way round. This may be somewhat exaggerated, but there are indications that makers will find it hard to keep up with the demand, especially as they have found it difficult to start on any stock up to now.

The mildness of the winter leads to the belief that spring will open much earlier this year. This is a good sign. Architects are also very busy, and some large contracts are pending. Plumbers on the whole are quiet now, but they anticipate plenty of work when building commences. No important change is announced. Prices all the way round are firm, and the situation is very healthy.

Soil Pipe.—Heavy lots of soil pipe are going out, and it is evident that stocking up is being done. Makers anticipate a tremendous pressure later on, and are dubious as to being able to fill orders when the rush is at its height. The market is firm and we quote light 60 off, and heavy 70.

Lead Pipe.—The market is firm at the recent advanced price. Orders have not been checked in any way, and already stocking up is being done for spring requirements. We quote: Pipe and waste at 25 off; traps and bends at 50; caulking lead, 5c per lb.

Solder.—With other lead products solder is firm, but no advance is reported. Users are buying more freely, not so much for immediate requirements as for stocking purposes. We quote half and half 20c, wiping 18½.

Iron Pipe—Some fair orders have come through, the firmness of the market stimulating business. We continue to quote ¼-in. black, 63; galvanized, 48; ⅜ black, 59; galvanized, 44; ½ black, 69; galvanized, 59; ⅜ to 4-in. black, 71½; galvanized, 61½.

Radiators and Boilers.—Although business has fallen off, there is still a fair immediate delivery trade being done. Some excellent booked orders have been taken, and the prospects both for boilers and radiators look excellent. We quote: Steam boilers, 60 and 5; hot water boilers, 50 and 10; wall and hot water radiators, 50 and 7½; steam radiators, 50, 7½ and 2½ per cent.

Scrap.—The market is on the quiet side with very little offering. Cast iron is scarce owing to the drain from Ontario, and prices have advanced $1. We quote: Heavy copper and wire, 11c; light copper bottoms, 10c; heavy red brass, 10c; heavy yellow brass, 8c; light brass, 6¼c; tea lead, 2½c; heavy lead, 2¾c; scrap zinc, 3c; cast, $15.

Metals.—Both tin and copper have shown a slight sagging and prices are now somewhat lower. We quote: Tin, 35c; copper, 14½c; imported and domestic lead, $3.75.

TORONTO.

Jan. 31.—Conditions in the plumbing world are much the same as they were a fortnight ago. While we are getting a little nearer spring there has as yet been no great advance of improvement in the situation. Jobbing being the order of the day, solder and lead lines are the most prominent features. Solder is slightly easier again.

Heating supply houses have issued notices shortening the terms of credit on boilers, radiators, pipe, fittings and valves along the lines indicated in last issue. While the approved net credit will extend to 60 day, a 2 per cent. discount will be given for cash in 30 days from the date of invoice or average date of month's invoices.

Supply houses are yet working on new specifications, and a number of master plumbers have still some finishing-up work to do in new residences.

Enamelware.—Manufacturers report activity in their plants. Preparations are being made for a season of work even surpassing the excellent business of last year. Prices though unchanged hold firm at quoted figures. The amalgamation of the Port Hope and Amherst plants and the building of the Standard Sanitary's plant at Toronto, will make for an interesting enamelware situation this season.

Solder.—There is an easing off again in solder prices, the outside figures ranging from 17c to 20c on various grades. Wiping solder is quoted at a range from 17½c to 18½c, though some houses are asking as low as 17c; and half-and-half bars run from 18c as the low figure to 20c. Sales are good at present.

Lead Pipe.—This is another good selling line just now. Prices remain unchanged since last issue. Pipe and waste are firm at the recent higher quotation—25 per cent. off. Caulking lead remains at 4¾c and traps and bends at 50 per cent. off.

Boilers and Radiators.—Makers of heating goods anticipate the largest business year in their history during 1910. Specifications received or rumored of are numerous, and some of the manufacturing plants have been enlarged to look after expected work. Hot water boilers and radiators are 50 and 10 off, and steam radiators 50, 10 and 2½ per cent. These prices are unchanged from previous lists, though the terms of credit being shortened from 90 to 60 days have a tendency to make the market and situation generally somewhat firmer.

Iron Pipe and Fittings.—There is continued fair trading in iron pipe lines. Large and medium sizes are as active just at present as are the smaller sizes. Booking, of course, takes up some of this business, a number of outside houses preferring to delay the receipt of their goods. Prices generally are unchanged. Standard bushings run fram 60 to 70 per cent., malleable bushings, 60 to 65 per cent., and nipples, 70 to 75 and 10. This range is given because all houses are not quoting the same figures.

Soil Pipe.—Light pipe is still 60 and fittings 70 per cent. The market is firm.

Brass Goods.—Fixtures are somewhat slower again in the city. Brass manufacturers are busy. High grade impression work is 60, and standard 70 per cent.; fuller work is 70 per cent.

Metals.—Tin, unchanged, 35c; copper, firmer, 14c to 14½c; lead, imported, $3.85; domestic, $3.75. Old metals: iron, 8c to 11c; copper, 10c to 11c; lead, 3c; zinc, 4c.

EFFECT OF HEAT ON WATER.

There is one most remarkable exception to the law of bodies expanding by heat—that of water under certain circumstances. Water at zero Centigrade, at which it melts, contracts up to about 4 degrees Centigrade, after which it begins to expand. This is a most singular phenomenon, but it has a very practical side. Water, then, is heaviest at 4 degrees Centigrade. Accordingly, in cold weather as the surface of any body of water cools to near this point it becomes heavier than the hotter water below and sinks to the bottom. This goes on until the whole body has a temperature of 4 degrees Centigrade. As the cooling proceeds the water becomes lighter and remains on the surface until it is frozen. If water did not possess this property a severe winter might freeze the lakes and rivers to the bottom, and the heat of summer might not be sufficient to melt it at all. In more simple language, perhaps, it can be said that in water at all temperatures above 32 degrees F. the motion of heat is sufficient to keep its molecules from rigid union, but at 32 degrees the motion becomes so reduced that the atoms seize upon each other and aggregate to a solid.

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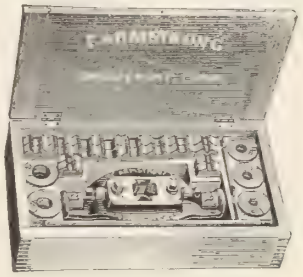

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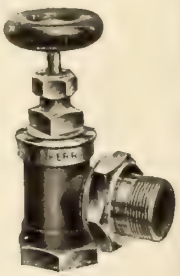

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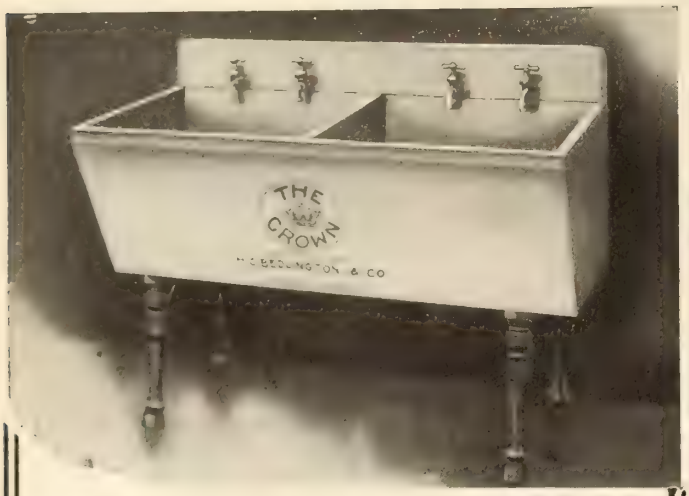

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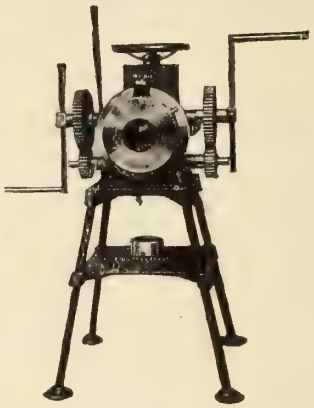

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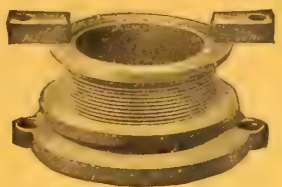

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that is just as good, and it is the incomparable, unapproachable pioneer of HOT WATER Boilers, 30,000 of which are in active service—its name, need we tell you, is : : : :

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Built on honor—of the best materials money can buy, by superior workmen, under the direction of competent engineers, and at the best plant ever devoted to the production of a Hot Water Boiler. : : :

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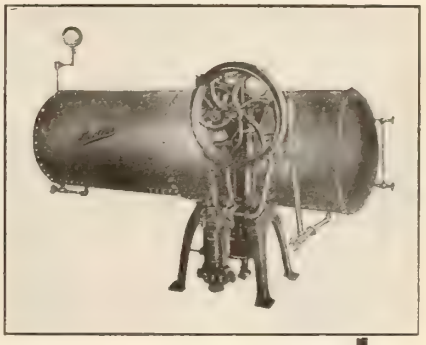

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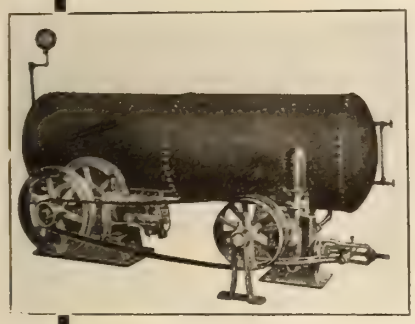

What a customer thinks of the "Peerless" System:

Toronto, January 25th, 1909

The National Equipment Co., Ltd.,
Toronto.

Gentlemen,—Regarding the Pneumatic System of Water Works installed by yourselves at the Toronto Free Hospital for Consumptives at Weston, Ontario. This system has now been installed for upwards of a year, and is giving good service. Before the use of this system the buildings were supplied from overhead tanks, and the water furnished by means of an electric motor and a windmill. Your system is an undoubted improvement upon the old. It embraces two five-thousand-gallon Hydro Pneumatic Tanks, a number eight Economy Hot Air Pumping Engine situated at a distance of about 150 yards. The well from which we draw the water is about 15 feet deep.

This system has given us no trouble from the day it was installed. It is simple in its operation and provides for a good supply of water in the buildings at all times.

I am pleased to be able to write you in this matter regarding your Pneumatic System of Water Works. Very truly yours,

(Sgd.) "J. S. ROBERTSON,"
Sec. Trust Board.

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Lombard Street, - Toronto

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We know of jobbers, tempted by difference in price, who are filling requisitions for "Vulcan" Chain Pipe Wrenches, with imitating tools. The imposition may have been practised upon you.

If you order a "Vulcan" please see that you get it. If you are satisfied with imitations, see that you get the lowest prices a which they are sold. The high grade of materials and manufacturing standards justify our prices asked for the "Vulcan."

All fitted parts of "Vulcans" are milled. Every detail of their manufacture insures extended wear and true interchangeability of parts.

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SIMPLEST AND BEST

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The Canadian Wolverine Co., Ltd., of Chatham, Ont., are Licensed as exclusive manufacturers, under Canadian Patent of Nov. 23rd, 1909.

L. A. CORNELIUS, Inventor.

The "Empire" is in great favor down at Ottawa—that is the "Empire" Closet Combinations. They are giving the best satisfaction everywhere. Read the accompanying letter from a plumber at Ottawa. Note that the plumber who installs an "Empire" does ***not*** cut down his profits by having to go back to the job and make repairs. Write us for full details concerning the "Empire" proposition.

This is only one of many such.
We will send name if you ask us.

Ottawa, Ont., Jan. 17, 1910.

Messrs The Empire Mfg. Co.,
London, Ontario

Dear Sirs:—In reply to yours of the 14th inst. we have much pleasure in testifying to the entire satisfaction we have had with the Empire Closet Low Down, so much so that we have adopted your closet almost exclusively in our business.

The two particular features which have led us to do so has been the fact that we have had no occasion to go back to any job to repair same, and again we had no warped lids or closet seats to replace.

Of several sample outfits in our Show Room, the "Empire" is preferred every time, because of its fine finish and substantial appearance it possesses.

With regard to the dowelled work in your latest improved Closet, we believe this will give it more lasting qualities than possessed by any other Combination Closet on the market.

We placed 180 of your Combinations on our work during the past year.

Yours faithfully,

Empire Mfg. Co., Limited - London, Ont.

"VOSPER"

PIPE CUTTERS

"The Cutters that Cut"---For 1910 and hereafter

" Stop the Losses this New Year and Hereafter in Your Shop "

You have sometimes detected a waste of time, which is money, going on in your business: if not, start now and watch. OUR AIM IS TO MAKE A PART OF THIS WASTE A THING OF THE PAST, for every time you have detected a leakage in your shop there are twenty times which you knew nothing about. Would it not be of interest to you to stop one PART of this loss (PIPE CUTTING) once and for all?

YOU SAY:—Naturally I know of these losses, but I have made money without your Cutters.

TRUE, SIR; and doubtless you realize the value of every penny, but to make more should be your aim.

For an example of part of your waste, we will take PIPE CUTTING and PIPE REAMING and put same to figures, showing a cost the old way and a saving the—**"VOSPER WAY"**

Example:—A small heating job where you have to cut 300 pieces of pipe and ream.

TIME--(Old Way)

1 Man makes a cut in 3 minutes
1 Man cuts 20 cuts per hour
1 Man cuts 300 cuts in 15 hours
15 hours' time at $0.20 per hour....$3.00
Reaming 300 pieces 5 hours at $0.20. . 1.00

Cost.....$4.00

(Note---No extra cost included for extra wheels or time lost in split pipe or time lost in making crooked cuts.

Time--**"VOSPER" Pipe Cutters, which cut the Pipe and Save Reaming.**

300 cuts:
1 Man cuts a pipe in 2 minutes
5 hours saved at $0.20.....$1.00
Reaming saved..... 1.00

Amount saved on 300 cuts.....$2.00

(Note—No extra cost included for grinding cutters (if needed). No extra cutters needed, as same will last over a year. No splits in pipe, as it is impossible to do so, and no time lost making crooked cuts, as this is also impossible to do with—**"VOSPER" Pipe Cutters.**

ADVICE: -If you do not have one of the **"VOSPER" Pipe Cutters**---"The Cutters that Cut"---you will be paying for one just the same by using old methods, and your loss will continue to run on when you might have saved the leakage, which is money. Can you afford to be without a "VOSPER" Pipe Cutter?

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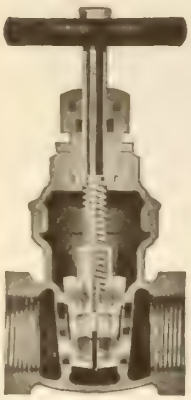

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GATE VALVES

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Special Features:

Highest Quality Steam Metal. Perfect Interchangeability. Double Compensating Bronze Wedges. Metal Gland in Stuffing-Box. Great Strength of All Parts. Carefully tested to 250-lbs. Water Pressure.

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We are happy when we get your order. We are happier with your continued orders. There is nothing like full quality, prompt delivery and goods that are right. We know our Solder is the best, the Plumbers have told us so. Don't forget we make Traps and Bends both cast and hydraulic drawn. For anything in these lines write The Canada Metal Co., Ltd.

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The Canada Metal Co., Limited - - Toronto, Ontario

A Morse and Dexter Improved Valve Reseating Machine

TO STEAM USERS:

You have all experienced the annoyance, trouble and expense caused by **Leaky Steam Valves.**

The **Improved Morse and Dexter Reseating Machine** will repair **in position** any size or make of steam valve.

No special skill required to operate this machine.

The universal chuck on the Morse and Dexter will fit any valve.

No grinding of valve seats after using this machine.

Guaranteed to make any valve perfectly steam tight.

Furnished on thirty days' trial.

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Mechanical Drawing for Plumbers, by R. M. Starbuck	1 50
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and Sanitary Engineer of Canada

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Circulating amongst Plumbers, Steam, Hot Water and Gas Fitters, Sanitary Inspectors, Heating and Ventilating Engineers, City Engineers, Boards of Health, Architects, etc.

TORONTO, FEBRUARY 15, 1910

CREATING MORE BUSINESS.

The plumber who is satisfied with selling a customer only what he has asked for is letting a tremendous number of opportunities for increased business go by him. This lost business modern sanitation points out is just what would make a tremendous difference in his net earnings for the year. A customer who comes into the store for something comes for what he wants. The good salesman, in addition to selling him what he wants, will sell him what he needs. The average man who starts out to buy sanitary ware does not spend half as much money on the things he sets out to buy and asks to have shown him as he does on heretofore unheard-of fittings which the modern plumber will put before him.

Any one can sell a man what he wants and asks for. Where expert salesmanship is displayed is in showing and suggesting articles that the customer needs when he knows of them, but of the existence of which he has up to then been ignorant. To do this requires considerable skill and diplomacy, as well as a pretty thorough knowledge of human nature. It requires the cleverness, judgment and tact that distinguish the good salesman from the bad one.

If the clever salesman is not already acquainted with his customer and his tastes, he makes a rapid study of him when he first meets him. By the time he has spoken with him for a short time he knows what he is interested in and the expenditure he is able to make, and can then determine in which direction and how far to force his salesmanship ability. Most men are willing to look at new modern fittings or illustrations of them, as long as they are not made uncomfortable by being made to feel that they will have to place an order. The clever plumber does not make that mistake. He handles his customer with delicacy and tact.

The best method of salesmanship is to forget as far as possible that you are trying to sell. Make the display of the goods the uppermost thought in your mind. Be proud of them. Show them enthusiastically. Let your own appreciation of the fittings you talk or the bath room you talk of be shown in your conversation. Simply talk as though you were glad of the opportunity to let your customer share with you the knowledge of how beautiful modern fittings are and what luxury can be had from the modernly appointed bath room. Keep price in the background. Relatively, it is unimportant. The main point is to arouse and clinch your customer's interest in the proposition of which you are telling him. Once that is accomplished, the sale is made—in nine cases out of ten. And remember this, that when you have interested a man or woman in modern sanitary ware, you have created new advertising. But even if you have lost that particular sale, you have created advertising for—your customer will pass on—some of the enthusiasm in modern luxurious bath rooms that you have communicated. You have created a sentiment in favor of yourself and your goods. And that's good advertising. Never forget to afterward send descriptive literature to the man or woman whom you have interested. It's good salesmanship.

BEGETTING A PLUMBING BY-LAW.

Plumbers in Hamilton, London and other cities where, to the discredit of the trade, no plumbing regulations exist, and no plumbing inspector has been appointed, can learn a lesson from the methods adopted by James Curry, a master plumber at Cairo, Ill., in an effort to force his city to step in line with modern usage and pass an ordinance requiring a standard of plumbing work. Mr. Curry instituted a mandamus proceedings to compel the adoption of a by-law offered as a model. Commenting on this the Metal Worker said:

"An action of this kind is sure to get the attention of the people, the very act needed to force those in control to bring about the desired change. In the present instance the limelight was focused on the plumber, and he was as a result interviewed by the local press, and given an opportunity to explain publicly what is involved. The public attention is usually excited in a case of the kind because of the easily spread and generally credited rumors that the passage of an ordinance is calculated to increase the cost of plumbing and even to demand changes in existing systems. Such, of course, is not the case, but instead the object is to force master plumbers to bid on practically the same basis for any particular installation and not on water supply and drainage systems which may be more or less faulty. This point emphasizes the second important bearing of the ordinance question, that of safeguarding the community against unsanitary work. Usually there is a State law in existence practically demanding local examining boards and an inspector's services, and it is not necessarily an expensive proceeding to enlist the help of a lawyer and to boost him with an existing satisfactory ordinance of some nearby city as a basis of the proceedings."

SOIL PIPE TRUST FAILS.

The Central Foundry Company, a corporation with headquarters at New York, and capitalized at $14,000,000, which manufactures cast iron soil pipes and fittings, went into the hands of a receiver on Saturday last, Feb. 12. Judge Hough of the United States district court appointed Waddell Catchings the receiver to continue the business at his discretion. The claims of the petitioning creditors amount to about $1,200, but the creditors allege that the liabilities of the company amount to more than $4,500,000.

The Central Foundry Co. is what is known as the cast iron soil pipe trust in the United States, and is the consolidation of 34 manufacturing concerns, which merged their interests in July, 1899. At that time it was said the combine controlled 95 per cent. of the U. S. trade. Of late years, however, the advent of smaller and newer pipe manufacturers cut into the business somewhat and there followed an era of price-cutting, which last year affected Canada. The dumping clause of the tariff helped to some extent to ward off the demoralization which prevailed across the line.

The effect of the failure of the Central Foundry Co. is expected to have a detrimental effect on the Canadian as well as the U. S. market, as there will be thrown on the market a lot of bankrupt stock. Over-capitalization is said to be one of the causes of the failure.

APPOINTED TO BOARD OF HEALTH.

Editor Plumber and Steamfitter,—I like the Plumber and Steamfitter very much and think it is improving all the time, so much so that I have stopped the American journals. If you have any instructive books on sanitary lines, send me a catalogue, as we were put under an inspector and required to take out a license last July.

This year I was appointed on the Board of Health and now it will be up to me to study all I can on sanitary matters. Our sewer system is not completed, but they are working and extending all the time.

J. A. CASLAKE.

Collingwood, Ont., Feb. 10, 1910.

Note.—A list of the books procurable through the Technical Book Dept. of the MacLean Publishing Co., has been sent to Mr. Caslake. He is to be commended for his desire to fill his new position with credit to himself and the trade he belongs to.

OFFICIAL NEWS
N. A. M. P. & S. F. of CANADA

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Chairmen of Committees,—Legislation, H. A. Knox, Ottawa; Sanitary, P C. Ogi'vie, Montreal; Apprenticeship, J. Griffin, Montreal; Essay, E. Russell, London.

Next Convention will be held at Toronto the last week in August, 1910.

CALGARY MASTER PLUMBERS HOLD BANQUET

The Master Plumbers' Association of Calgary held their annual banquet on January 14, but they must have all eaten too heartily as letters written to several asking for a report have failed to bring a reply.

A feature of the event was the attendance of representatives of the Plumbers' Journeymen's Union, and the speeches, which reflected the good feeling and mutual understanding between employers and employes.

James Marr as toastmaster spoke favorably of the compulsory examination of both master plumbers and journeymen, and advocated a course of lectures on plumbing to be held during winter months.

Mayor Jamieson and Wm. Georgeson, President of the Board of Trade, spoke at length regarding the plumbing trade and the value of the plumber's work in the development of a growing city. Addresses were also made by Plumbing Inspector Fletcher, D. McGillicuddy, L. E. Mackenzie, Mr. Purchase, Mr. Morton, Mr. Fordyce, Mr. Fulton and Mr. Porter.

ALBERTA'S VICE-PRESIDENT.

E. J. Young, who for several years has been vice-president for Alberta in the Canadian Association of Master Plumbers, learned his trade with Smith & Ferguson, Regina, taking a trade school technical course and leaving them eight or nine years ago to go to Calgary as foreman for the J. H. Ashdown Hardware Co. After three years he went into business under the firm

E. J. YOUNG, REGINA,
Vice-President for Alberta and Saskatchewan in the N. A. M. P.

name of Young & Burnett, but after four years he purchased Mr. Burnett's interests and now conducts the business as the E. J. Young Plumbing Co., Ltd., some of his principal workmen holding shares in the company, which has a staff of 53 employes.

Mr. Young is an enthusiastic believer in plumbing examinations and says: "No city in America has better plumbing regulations, properly enforced, than has Calgary."

PLUMBING ORDINANCE AT ATLANTA, GA., SUSTAINED.

The constitutionality of the plumbing ordinance of the City of Atlanta, Ga., was lately involved in a case of a party not having a license, against the city clerk.

The plaintiff desired to do plumbing work in the City of Atlanta without submitting to the examination required by the city ordinance, and contending that the ordinance was illegal, sought to have it set aside and to force the city by mandamus to issue his license.

Judge Pendleton, of the Superior Court, rendered his decision sustaining the validity of the ordinance as applied to working plumbers, and denied the prayer of the petitioner for a mandamus.

THE EVOLUTION and SIMPLIFICATION of PLUMBING

by Herbert Francis Shade
VICTORIA, B.C.

[Written for publication in the Plumber and Steamfitter of Canada and Registered in accordance with the Canadian Copyright Act. Second Article.]

THE TRAP ON THE MAIN DRAIN.

The much debated question of the house trap on the main drain is still an open one and some authorities still still maintain its use and are strong in their advocacy of its adoption. The

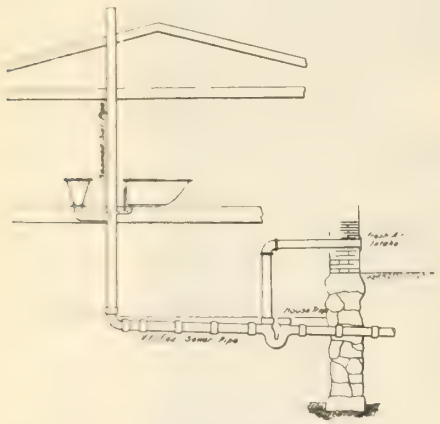


Fig. 1.—Old Method of Main Trap Installation.

question in a condensed form amounts to this: Whether the connection between the plumbing system and the public sewer shall be indirect with the trap or direct without the trap. Generally where the trap is used it is placed on the house drain near the front wall of the building at the shortest distance from the sewer and has two vertical openings, as shown, the one on the sewer side of the water seal is capped and used for clean-out inspection purposes, and the one on the house side is continued its full size outside the wall for the admission of fresh air and is

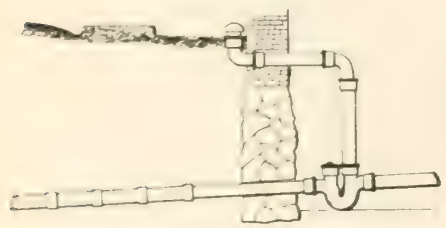


Fig. 2.—Interceptor Trap With Fresh Air Inlet.

called the "Fresh Air Inlet." It is covered by a grating or cowl, whichever best suits the conditions. In cold climates the air inlet is taken off with a tee from 10 to 20 ft. on the house side of the trap.

If we look up the records of forty years ago we find both in England and this country that not only was the main drain trapped, but a trap was often used at the bottom of all vertical stacks, lines of soil and waste pipes, and in some instances the fixture trap was omitted and a common trap placed in the basement.

The demerits of these arrangements are too apparent to practical minds to be worthy of discussion and need not further be dealt with here Possibly the next important step in the advancement of sanitary science was to place the trap close to the fixture, omit the trap at the bottom of vertical stacks and place an interceptor trap provided with a fresh air inlet next the front wall of the building. This remained the standard method for many years and would doubtless have remained so had it not been for the dire necessity for proper ventilation and the consequent investigation along these lines. The importance of such ventilation led men who have made a life study of this important subject to probe this question, with the result that the truth was arrived at that, the supposed ventilation of ewer systems through the manholes and ventilators on the streets was not ventilation at all, but was nothing more than a relief of pressure of any gas that would accumulate in the pipes by the decomposition of organic matter and from other causes. This is readily explained in the words of a well

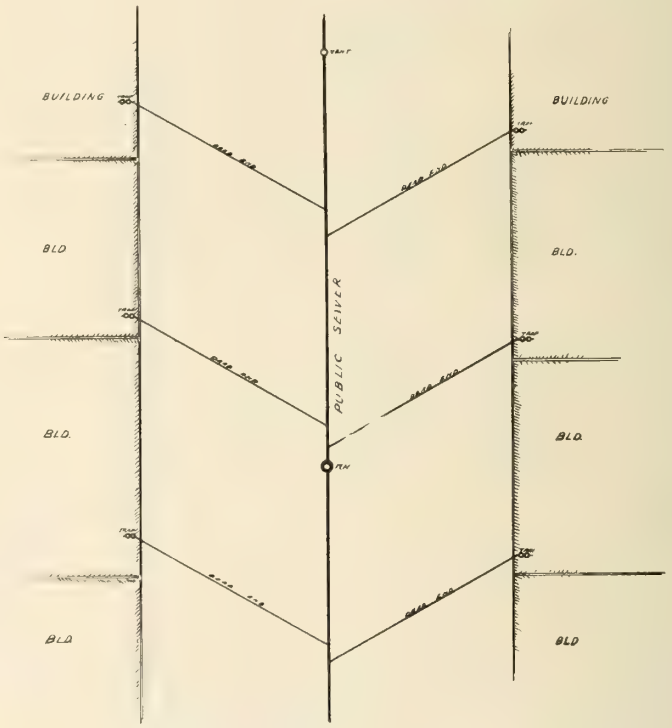


Fig. 3.—Lateral Sewer With Several Trapped Branches.

known English engineer "with only these openings as a means of relief the system cannot be ventilated as it is on the same principle that you cannot ventilate a bottle by removing the cork."

By the term "ventilation" is meant the operation of the passing of fresh air through the sewer for the purpose of expelling impure air and dissipating noxious odors.

It will be apparent to anyone who studies Fig. 3 which shows a lateral sewer with its several trapped branch-

es. that the whole part shown is nothing more than an octopus of dead ends with no possible chance of any movement of air through them, and even though no sewage were discharged the air would become dead by the absence of oxygen (absorbed), leave alone taking into consideration that waste matters passing through these pipes are constantly giving off gases in the natural course of disintegration. To overcome the existence of stagnant air in the system without omitting the trap, was the next step of the sanitary engineer towards perfect ventilation. In order to accomplish this vents as shown in Fig. 4 were installed at the curb.

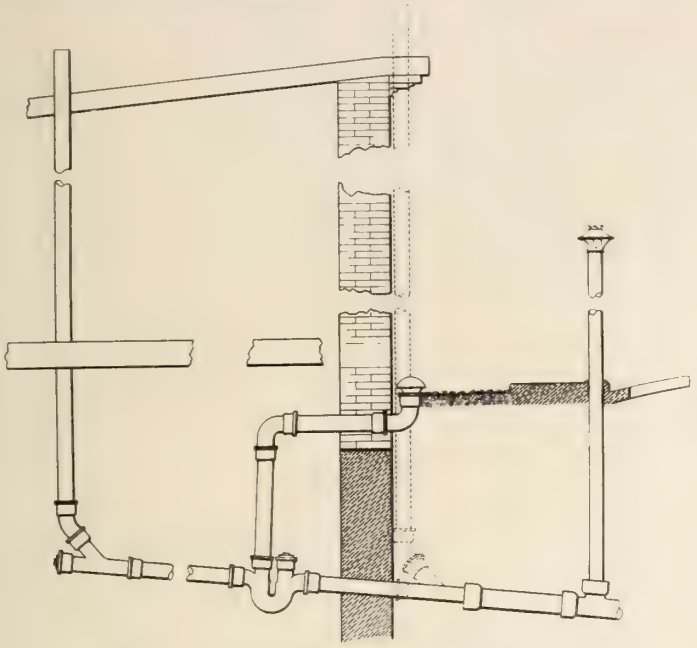


Fig. 4.—Showing Curb and Street Vents.

This was a considerable improvement but not without disadvantage, as in closely built districts the proximity of vents, (being less than the width of the sidewalk) to the windows was objectionable. The next step towards improvement, and the system which is now in vogue in England and has given the best results, (excepting that involving the omission of the trap), is by carrying a pipe full size of the sewer up to the top of the building on the sewer side of the trap, as shown by dotted lines on Fig. 4.

In some cities in this country the regulations make the use of the interceptor trap optional on the owner's part. This is hardly a proper course to pursue, as in a district where the greater percentage of connections is trapped the untrapped drain has to do considerably more work of ventilation than it would do in a wholly untrapped system and may possibly have to relieve a lateral of several hundred feet. It is, therefore, desirable in the interest of sanitation that wherever the use of the trap is optional the vent as shown by dotted lines in Fig. 4 should be insisted upon.

It will be seen by the foregoing that in the systems where the house drain is trapped the ventilation or relief is from the openings on the street, as shown in Fig. 5, while in the case of systems directly connected without the trap the manholes and vents are inlets for admission of fresh air, with the outlet through the vent openings above the roof, as in Fig. 6. Apart from the importance of minimizing the accumulation of sewer gas from the whole system, both public and private, by direct ventilation, the use of the interceptor trap is a serious impediment to the free flow of sewage away from the house in the shortest possible time. Owing to its excessive depth of seal it hastens the deposit of accumulated matters which would otherwise pass on to the main sewer, and eventually plugs up the trap; and through this in any ordinary case the air contained in the house drain is far more offensive than that contained in the public sewer. This fact completely floors the argument that by direct connections that sewer gas is laid on to the house. The greatest score against the trap in this way is the fact, as everyone knows who is connected with drainage works, that 80 p.c. of the blockages of house drains where the house trap is used, are found at this trap. This fact seems to call out that this installation is wrong and not according to natural laws, and if all that is necessary to cause its entire abolishment is to break down the arguments of its supporters its obsequies are near at hand.

It is generally assumed that the main argument in favor of the trap is that by its use it cuts off any direct connection with the public sewer and prevents the sewer air from entering the house drain, thus preventing communication of disease breeding or pathogenic germs from one house to another. Then, if it is proven beyond doubt that by the use of the trap the air contained in the house drain is more dense than that contained in a ventilated public sewer, and that disease breeding germs have never been found and do not exist in main sewers, the chief arguments fall to the ground. In what follows will be shown that no trace of bacteria has yet been found in sewers and experiments by eminent bacteriologists go to prove that they cannot exist there.

Another weak argument against the omission of the trap is that in closely built districts with buildings of irregular height the vent terminals, being sewer ventilators, come within too close proximity to the windows adjoining higher buildings. To this it might justly be replied that the civic regulations of different cities govern the distance for the end of vent pipes to window openings. This allowed distance

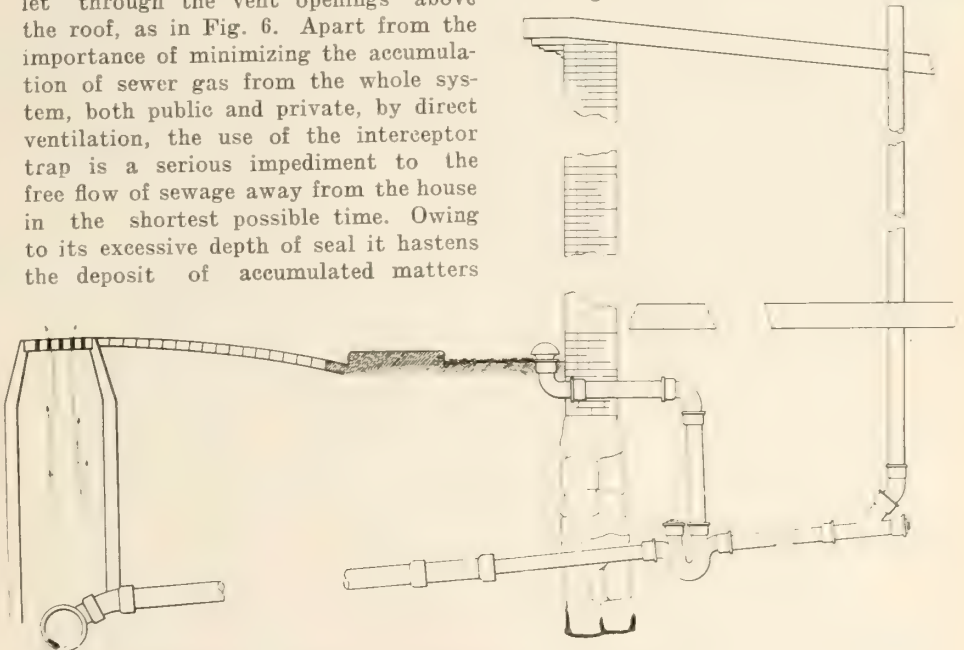


Fig. 5.—Manholes as Sewer Outlets Where Interceptor Trap is Used.

varies from 15 to 25 feet, a distance considered by bacteriologists sufficient for dilution of sewer air to make it harmless, and that in the trapped connection the air is much more dense than in the system where the trap is omitted.

There seems to be a real boomerang to this argument by the fact that when you trap house drains the long dead gas producing ends (See Fig. 3) give off through the manholes in the centre of our streets the real unadulterated sewer air, and that we daily walk and stand upon these very openings. On this point the supporters of the trap try to blow hot and cold in the same breath. If it is bad to emit sewer air from terminal ends of vent pipes, it is worse to discharge it through openings in the centre of the streets, where we may come in direct contact with it.

J. Pickering Putnam in discussing the subject of the main house trap and the impossibilty of bacteria existing in sewers says:—"Hesse, who first investigated this point, took a two-inch glass tube about a yard long, the inside of which he covered with a layer of nutritive gelatine and sucked air through it at a slow rate. When examining the tube afterwards he found that a large number of bacteria had settled in the first fourth, that the number was somewhat less in the second fourth, and that it still further decreased in the third fourth, and that no bacteria at all settled in the last fourth." Further on in this excellent treatise of Mr. Putnam, he says, "We know for instance that in times of epidemics, the air in the streets is laden with the germs of the specific disease in question. If we could erect in front of our windows and doors continuously moistened filters of such construction that no particle of air could enter the house without first coming in direct contact with some part of the moist surface of the filter, and if the filter could be provided with a germicide maintained constantly active, it is certain not only that the inmates of these houses would be shielded from the diseases conveyed by germs as long as they remained within the protection of the filters, but also that the germs themselves in the locality would gradually be diminished in numbers until if the traps were numerous enough all might ultimately be destroyed."

"Now the sewers form precisely such filters and if copiously ventilated by pure air currents induced by making every house drain a suction pipe, absolutely no offensive odors could come from the sewers, and every particle of air thus drawn in from the streets would be freed from the germs constituting the epidemic. How shortsighted and foolish it is to legislate against such beneficent ventilation and purification by requiring a barrier to be interposed at every house drain outlet, by which the only practical way of thoroughly ventilating the sewers is prevented."

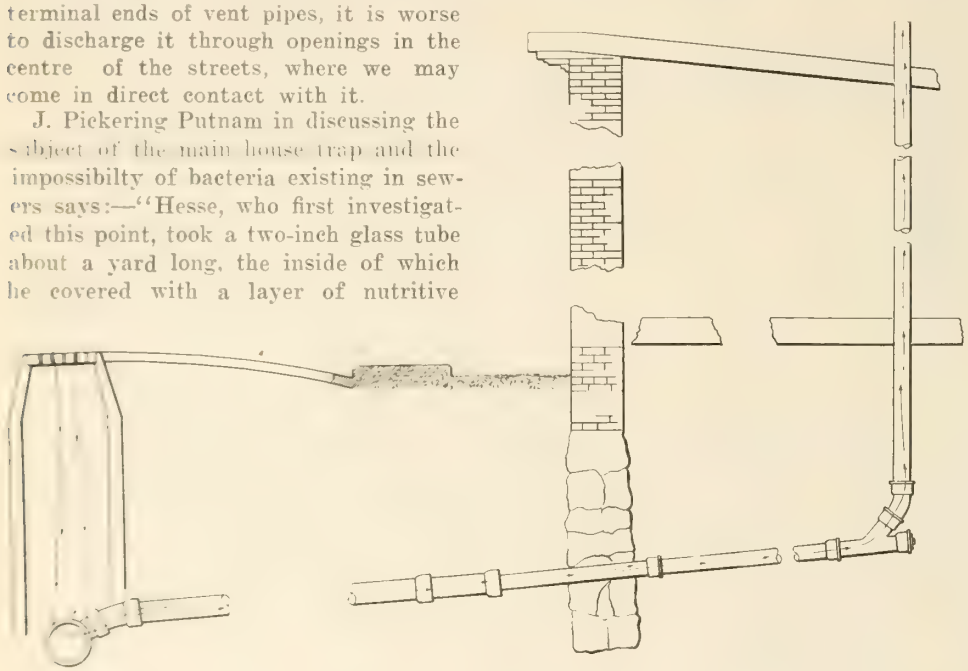


Fig. 6.—Direct and Modern Method of House Drain Connection.

Professor Jordan, an eminent authority who was employed by the City of Winnipeg to make an extensive study of the cause of the typhoid epidemic in February, 1905, in his report says in part:—"The condition of the city sewers in Winnipeg has been such as to give rise to the conjecture that the emanations from the manholes* or from defective plumbing might account in some way for the prevalence of typhoid fever. It is difficult, however, to find support for this view in the known facts of typhoid epidemiology. The typhoid bacillus has never been found in sewer air, which indeed for obvious mechanical reasons is usually freer from bacteria of all sorts than ordinary air. It is extremely unlikely judging from existing bacteriological data, that sewer air is the vehicle by which the typhoid germ is conveyed from place to place and the ascertained facts regarding the distribution of typhoid fever in Winnipeg lend no countenance to the view that sewer air has been a direct means of transmission in the present outbreak. At the same time it must be remembered that highly offensive stenches arising from the decomposing matter in unventilated sewers has been shown to exercise a depressing and weakening influence upon human vitality. It is quite within the bounds of possibility that the noisesomeness of the city sewers has thus played some part in rendering certain persons more susceptible to the attack of the typhoid bacillus.

Charles B. Ball, the present chief sanitary inspector of Chicago, who secured his position by a competitive examination against all comers, and who is undoubtedly one of the most learned sanitary engineer's of the day, in one of the most convincing papers on the "Trap on the Main Drain," says.—"Every observer knows that many fresh air inlets of every city where they are supposed to be in use, are ineffective. How long does the grating remain unobstructed and allow fresh air to pass into the pipe? When it is clogged with dirt of what use is the fresh air pipe and why is it put in at all, if it cannot be made of actual value?"

John K. Allen, editor of "Domestic Engineering," a sanitarian of the most modern type, scores the use of the trap and completely breaks down all its supporters' contentions.

William Jacobus, of Newark, New Jersey, says in regard to the trap on the main drain, with its air inlet, "the use of intercepting filth-retaining traps on the main drain as demanded by plumbing ordinances of to-day, is a flagrant violation of good plumbing practice and inimical to the preservation of health in general, as is proved by the absence of retarded filth, and the clean-flushed or scoured seals of the drainage systems, where the main traps are not in use." He further protests, "against having this filthy, germ-retained pipe-air shot into the face and lungs at every turn of the day's travel, or even when sitting at home from some fresh air inlet or more properly filth-charged catapult."

Doctor Azel Ames, the father of American sanitary regulation, advocates the direct main drain without the trap in these words:—"This, the omission of the trap, is the advanced gospel of common sense, born of experience. The old-fashioned running trap in the house drain close to the house, was the abom-

* Winnipeg uses the interceptor trap.

ination of desolation, spoken of by Daniel the prophet. It plugged, it froze, it stank, it syphoned, it was an indictable nuisance and a constant menace. Yet it is required to-day by the ordinances of many cities and towns, and is a travesty upon scientific fact and advance."

These are only a few of the opinions of men who have analysed the use of this barrier and found it faulty with no feature to recommend its us. The writer at one time was a supporter of the use of the trap on the main drain, but by actual observation, experiments and results obtained I am now convinced that the omission of the trap is a step in the right direction, and by its use proper ventilation of sewers cannot be obtained. We have in Victoria 16 miles of sewer, where the use of the trap is general, and over 47 miles, where the house connections are made without the trap, so that we are able to see the comparative merits of this question and the difference of the sanitary efficiency is so marked in favor of the direct connected house drain without the trap, that for us the question is settled for all time.

WANT PUBLIC COMFORT STATIONS.

In addressing a series of public meetings in St. John lately, Rev. T. Hunter Boyd, who was appointed by the New Brunswick Association for the Prevention of Tuberculosis to lecture on the subject of public health, has been advocating that public comfort stations should be established. It was in the interests of public health, he claimed, that sanitary conveniences such as are found in other cities should be provided in St. John. The only place of the kind in St. John at the present time is the toilet room in the city market building which opens from the street, but is only accessible during market hours—6 a.m. to 6 p.m. in summer and 7 a.m. to 5 p.m. in winter. A description of this station was given in Plumber and Steamfitter some months ago.

Rev. Mr. Boyd holds that the city should extend to the visitor the same courtesy and the same consideration in regard to sanitary conveniences as a citizen extends to a guest at his house. Men should not have to go to saloons for such conveniences. The matter is likely to be agitated to such an extent that action on the part of the city council will be forced before the Dominion fair opens in September next.

Advantages of the Interceptor Trap Argued

"Practical Sanitarian," in the Metal Worker, Gives His Reasons Why He Favors its Retention — Argues That Faulty Construction is no Reason for its Abolition.

A problem ever to the front, but never solved, must, like the tariff, be one of no ordinary importance. The intercepting trap seems capable of furnishing subject matter for every author who finds himself without something better to write about.

It seems to the writer that the first of several points to be settled is whether breathing sewer air is conducive to health. If so, the intercepting trap and all other traps may be abolished with impunity. If not, the intercepting and fixture traps, with precaution to keep them sealed, should be regular features of plumbing. Then again if there is no danger of coal gas or any other inflammable gases finding their way into sewers, no intercepting trap would be necessary on that score. If so, it is safer to use it.

Another point: If gasolene, kerosene or other liquid likely to form inflammable vapors is never turned loose into sewers by accident or otherwise there would be no need for intercepting traps on that score. If so, they should be used. If, beyond the shadow of a doubt, air currents cannot possibly carry anything that would transfer contagious diseases, no intercepting trap would be necessary on that account. These are certainly some of the points that should be considered in determining whether intercepting traps should be used. All plumbers know how to interpret some of them.

Faulty Instalations.

Because some fresh air inlets are inoperative through careless installation, want of repairs or ignorance on the part of the workman who placed them, is no reason why the trap should be abolished. Because the aggregate area of house connections will equal once or many times that of the sewer is no reason why house soil pipe systems should constitute vents for the public sewer any more than the misplacing of foul air outlets should be adequate reason, nor should the fact that many buildings would require a foul air line to be carried up to the roof or the vent stack of the system run next to hot flue and thus put the owner to some expense, have any weight in the matter. It is a question of what method will most safely conserve the health of the occupants of the building that has to do with whether the sewage system will be installed one way or another.

Plumbers know positively that a foul air outlet can be effectively installed on any job, and they know positively that a fresh air inlet can be provided that will fulfill its mission under any conditions and never under any circumstances eject foul air. They also know that there is no positive assurance that any system, no matter how installed, will not sooner or later leak into the house whatever it contains. Shall it be sewer air which at the best ever claimed for it is unpleasant to the sense of smell, and with no safeguard to other dangers aside from health; or do we prefer from possible leaks, air practically as pure as the atmosphere, free from contagion, danger from inflammable gases, effects of liquids that may form explosive compounds, etc? To condemn the principle supporting the use of the intercepting trap on the results obtained from faulty installations would be as foolish as to condemn the design of a building because the builder had inadvertently placed some of the openings below the grade line.

The plumbing fraternity has laid much stress on its claims to dignity on the grounds that prevention is better than cure; that as sanitary engineers the plumbers are conservers of health, etc. If the trade allows the intercepting trap to be condemned by any body to the extent of recognized abolition, a substantial stanchion to some claims of the past is thereby knocked from under them, and the fraternity is proved guilty of at least unwittingly posing in a false light in an attitude it could not maintain under the searchlight of supposed truth. It, therefore, behooves the trade to exert itself in behalf of the retention of the intercepting trap, as it seems the weight of evidence is clearly in its favor.

PLUMBING INSPECTOR FOR KINGSTON.

Henry R. Taylor, a Kingston hardware merchant, is carrying on an active campaign for the appointment of a plumbing inspector for his city and as a result of his motion at the last meeting of the Board of Health, the council will be asked to appoint such an official. Some time ago, the Board of Health passed a resolution ordering that by May 1, of this year, all privy vaults must be done away with, in nearly the entire city, and with such a large amount of work, it will be absolutely necessary to have an inspector.

The Merits of Lead vs. Iron Pipe Compared

Charles H. Denison Writes an Article for The Plumber and Steamfitter Which Ought to Cause Some Discussion — Some Strong Arguments in Favor of the Use of Iron Pipe as Against Lead — Letters Invited From Readers in Reply to the Points Raised.

The use of lead in plumbing installations has continued for hundreds of years, but, during the past quarter of a century it has been largely replaced with iron pipe, especially in the United States. To the mind of the writer of this article lead has but one feature to recommend its continued use in the plumbing jobs of the twentieth century, and that is that it resists the corrosive action of water and acids to a greater extent than iron pipe.

Where it is found that the action of the water is injurious to the galvanized pipe, I suppose, therefore, that lead pipe will be used until some better material can be found. It would seem, however, that the better and more scientific method would be to treat the water by purification and chemical combinations, so that it would not injure the pipe.

Iron Pipe Here to Stay.

If iron for pipes, is so inferior, whether cast iron or galvanized, why not go back hundreds of years to the practice of using lead for sewers, mains and long distance runs where the water is carried several miles in cast iron mains of immense size? The lead simply would not stand the pressure. Concrete would, but not lead. The common use of iron pipe has arrived and it is with us to stay until some better and more practical and cheaper means are discovered, but rest assured, it is not lead pipe.

A Rub on Old Timers.

I have, many times, been amused at the peculiar viciousness with which the "oldtimer" and the advocates of lead pipe attack their opponents.

According to the lead advocates, a man who uses iron pipe is no mechanic, must of necessity have an unsanitary job and don't deserve to live anyway, just because he does not see fit to wipe joints and will use slip joints, which somebody besides a plumber can take apart.

Science Rather Than Graft.

The days of plumbing as a graft are rapidly drawing to a close, and the passing of lead pipe has assisted greatly in the matter and in the future we shall live to see plumbing take its proper place

I saw a statement some time ago to this effect, "that when the lead pipe bursted, it could be mashed together, thus stopping the flow of water."

Say! that was a remarkably clever thought. Why the person could much quicker run down the cellar and turn off the stop and waste, which nearly every one knows how to do, while but few, except a plumber, could make a good job of temporarily closing a lead pipe against a head of water.

Arguments Against Lead Pipe.

Again, as lead pipe can be so easily mashed it is a mighty poor article to place in a room or building or cellar where it will be liable to receive much rough usage. It is a plainly recognized fact that plumbers hesitate to place lead piping between floors, for two very important reasons.

First, after the roughing in is done, and while the finishing of the room is being done by the carpenter, it is an even bet that holes will be pricked in the lead pipe by some careless carpenter. Then when the "test" is applied the plumber is put to much trouble and expense to make good the damage.

Second: Rats seem to be intensely fond of lead pipe. They sometimes gnaw holes in it to get at the water, and often out of pure viciousness will gnaw the pipe full of holes. Only last week a piano warehouse at London, Ont., was flooded with water as a result of the work of rats.

Any plumber of experience knows that the above two points are a daily occurrence in various parts of the country.

Noise in Iron Pipes.

It has been stated that the transmission of sound is less in lead pipe than in iron pipe, but this will not be so if the iron pipe is properly put in.

If iron pipe is reamed to give it the full size inside, and if pipe of sufficiently large size be used, properly hung and insulated little trouble will come from noise or running water.

No Lead Used on Jobs.

There are jobs installed in various parts of the country entirely free from any lead whatsoever, except what was used in calking together the joints on the soil pipe. To call these jobs unsanitary unless they have been gone over by an expert, is not wise. Such jobs may be installed improperly, or they may be entirely correct and sanitary from start to finish. It depends upon who put them in and who drew the plans for their installation.

The Job—Not the Material.

It is admitted that it took more time to put in a lead job than one of iron; but I do not believe that this feature should receive any consideration from either side.

It is the job that should be considered and what it will or will not do, and how it is going to work after it is in, that should occupy our attention.

A few dollars more or less on either side should not cut any ice, whatsoever. I am not so radical as some whom I have seen, and I know full well that a good plumbing job can be put in with lead, and so can it be done with iron.

Workmanship the Real Test.

That point rests upon the journeyman and also the planning of the job and also the honesty of the contractor. However, when we talk about the mechanical appearance of the job, its general safety, and the simplicity of repairs, we have a situation where the iron pipe beats lead pipe "both way from the deuce."

I have, for many years contended that all plumbing should be so installed that any of the fixtures could be removed with a monkey wrench and screw-driver. I do not mean by this statement to advocate the theory of each man doing his own plumbing; but I believe that the simpler the installation, the less time it will take for repairs and as there is no profit in job work, the quicker the plumber can make repairs, the better satisfied the customer will be, and the less chances for any disputes or "kicking."

Lining up the Pipe.

As regards arguments against not getting the lines straight and the joints of iron pipe leaking, such statements are merely the result of prejudice.

Any man worthy of the name of journeyman plumber (worthy, I say) can get his pipe lines up in a mechanical manner if he so desires.

As for the leaks, they are a mere matter of a proper amount of care, or else the result of a set of poor dies, both of which matters can be easily overcome.

Expansion in Pipe.

The argument of expansion has been frequently used against iron pipe. Now any plumber of experience with iron pipe, and more especially if he has had

any experience in the steamfitting line, knows very well how to overcome expansion in iron pipe, and to arrange matters so that the pipe can contract and expand easily and with no damage, whatever, to the job. The expansion of lead pipe, however, differs from that of iron pipe inasmuch as lead never contracts and expands to the same extent which fact gave rise to many difficulties in its day. Who does not remember the leaky lead pipes upon the range boilers and also the wiped joints thereon? And these were points not always to be laid to the door of defective workmanship.

Still Another Advantage.

A point well worthy of consideration is that the present condition of American advancement does not demand "one continuous line of pipe fused or melted together." It demands the very opposite. In many of our cities huge buildings are erected only to be completely dismantled ten or fifteen years hence, and the item of getting out the plumbing in as good shape as possible is of no considerable account.

Again fixtures and systems are improving to such an extent that the system in a large building is liable to be changed in a few years and the installation should be put in in the easiest possible manner consistent with good sense, practical results and proper sanitary laws, and from the results thus far observed this can be accomplished much more effectively by the use of iron rather than lead pipe.

PLUMBING TRADE PATENTS.

The following is a list of Canadian patents relating to plumbers' and steamfitters' appliances recently granted and furnished by Fetherstonhaugh & Co., Ottawa:

123172. W. Eisemann, Cleveland, pipe couplings.

123180. H. D. C. Harrison, Kingsville, Pa., pipe couplings.

123250. F. Anderson, Freya, Johannesburg, straightway valves.

123269. J. M. Cameron, Cranberry, N. Carolina, pipe couplings.

123338. J. Stevison, Plateville, Wis., valves.

123341. M. Ray, Buckeye, Ky., water filters.

123342. C. L. Duenkel, East Orange, N.J., meters.

123382. C. W. Allen, G. Wallen, Syracuse, N.Y., sanitary appliances.

123388. W. E. Apt, E. Scholdt, St. Joseph, Mo., gas stoppage alarms.

123390. N. McNab Caulfield, Victoria, Australia; J. S. Link, Melbourne, Australia, mechanisms applicable for lighting and extinguishing gas lamps and operating valves from a distance.

Methods of Heating and Ventilating Factories

R. S. Sheldon, Galt, Outlines the Advances Which Have Been Made in Methods of Heating and Ventilating Factories in the Past Few Years.

A good heating system is quite as essential to the success of any manufacturing plant as are good materials, workmen, tools and light, while the entire success of the plant cannot be attributed to the sanitary conveniences and the comforts afforded the men, yet it is a safe conclusion that the same results cannot be obtained from the shop devoid of these things, that could be obtained with them. A factory can be heated in many different ways. In days gone by it was not considered necessary to provide any more heat for the employees than that given by the ordinary wood stove. This crude method of heating was replaced by hot air furnaces, then by steam pipes suspended from walls or ceilings. These systems have in turn been superseded by systems that besides giving the necessary heat, also provide a system of positive ventilation that has almost become an absolute necessity owing to the overcrowding of many manufacturing establishments and in many cases by the vitiation of the air due to the process of manufacture.

Limitations of Direct Radiation.

When a building is heated by direct radiation or by steam pipes suspended from the ceilings or walls, the wall or ceiling close to the heating surface is maintained at a comparatively high temperature so that the temperature difference between it and the external air is great, and the result is a rapid loss of heat that has not been of much advantage in heating the air contained in the building. A factory may be heated by direct radiation and ventilated without special appliances, if the process or activities carried on in it are such that they do not contaminate or foul the air, or if gases and dust are removed before they become diffused throughout the building. This system, while it may be admirably applicable to many classes of manufacturing buildings, cannot be applied to any building. This can be shown by a comparison of an ordinary building and a paper mill, in a machine shop or plaining mill for instance no steam, moisture or vitiated air is given off as the employees are not generally very much crowded, and many of such buildings are heated in a fairly satisfactory manner by direct radiation or pipe coils, which are usually strung around the outside walls. Such a system of heating would however, be far from satisfactory in a pulp or paper mill, where every day large quantities of water are given off continuously in the form of steam and vapor from the drying cylinders over which the paper is passed. This moisture must be taken up by the continuous circulation of large volumes of warm dry air or it will condense on the cooler roof and walls and will cause serious inconvenience and damage both to material and machinery by water dripping from the roof and by running down the walls in streams. Then in the factory where hundreds of employees are assembled in one room, the air very quickly becomes unfit to breathe, which makes them inert, forgetful and careless and subject to severe colds and other disabilities, which tends to make them irregular in their attendance. The only remedy for this is a system of ventilation, and this system of ventilation in the winter time must be considered in connection with the heating system.

Fan Ventilation and Heating.

With the fan system the method of supplying and distributing the air is one of the chief points to be considered. The usual methods of supplying heated air are, where the air is taken entirely from out of doors and is forced directly into the building through distributing ducts. This method is known as the Plenum system and the pressure produced in the building causes a continuous exit of air from the building, either through the natural opening as is usually the case in factory buildings or through specially provided vent openings as in public buildings, school houses, etc. A second and more common method for shop buildings where the fan system is used and forced ventilation is not a necessity, is to draw the supply of air entirely from within the building being heated, and again heating it and forcing it through the distributing ducts. This causes a continuous circulation of air within the building and when properly applied gives excellent results. The first of the above methods gives the best of ventilation and is usually employed in connection with paper mills, pulp mills, foundries, shoe factories, etc. The ideal system, however, is the fan system of heating and ventilation, combining the plenum method and the recirculating method. In this way the greater portion of the air can be returned to the apparatus from within the building, and sufficient fresh air can be drawn from with-

out the building to create a slight pressure within the building and to prevent any inward leakage through crevices. In this way the natural leakage is supplied, not by inflow of cold air through the crevices around the doors and windows, but by air drawn from outside and heated by the fan coils to an effective degree before distribution. The proper amount of air to be drawn from without is determined by securing a point where the noticeable inward flow of air around the doors and windows ceases; if the plenum is carried beyond this point there will be a loss caused by unnecessarily heating the outdoor air. Of course, where the employees are placed closely in the factory, sufficient air must be furnished from without to provide them with ample ventilation to prevent vitiation of the recirculating air, and in many factories much more fresh air from without is required than that necessary to make up for the natural leakage. In such instances vent openings are furnished to allow this excess of air to escape freely.

The humidity of the air also has much to do with the comfort or discomfort produced by given temperatures. Ordinarily the out of door air contains something like 70 per cent. of the moisture it is capable of carrying, but the capacity of air to carry moisture increases rapidly as its temperature rises so that air taken in at 40 degrees and warmed to 70 degrees is then relatively very dry, quickly absorbs moisture and is not nearly so comfortable as it would be at a lower temperature, but containing more moisture. The humidity most agreeable to the human body is about 65 per cent. and air at a temperature of 65 degrees and a 65 per cent. humidity is quite comfortable and much more agreeable than 70 degrees of heat and a humidity as low as 30 or 40 per cent.

In textile mills, cigar factories, and many other manufacturing plants a certain degree of humidity is absolutely essential to successful operation and many of such institutions secure the required degree of humidity by placing humidifiers in the rooms. Humidification is accomplished very simply in connection with the fan system of heating and ventilation. After the air has passed a tempering coil it is passed through an atomizing chamber where it is mixed with water freely divided by being put through specially designed spray nozzles. By regulating the temperature of this water (which is used over and over again) any desired degree of humidity can be maintained throughout the factory, and if necessary the degree of humidity desired can be automatically maintained by the use of an humidostat.

It will be seen from the above particulars that the fan or hot blast system of heating and ventilating lends itself more readily than any other system to the variety of applications called for in modern industrial plants, and there is no reason why this system should not be used for all classes of manufacturing establishments as it is more efficient and dependable than other heating systems. The steam coils used for heating the air can be operated in conjunction with any vacuum system.

The great number of different ways in which the fan system can be installed has brought it into universal favor and any one contemplating the erection of a factory would do well to consider this system thoroughly as it not only heats the buildings economically, but adds to the production of the employees by giving them healthy, sanitary and pleasant surroundings which in themselves promise a better product and a better output.

EXPLOSIONS AND INCOMPETENCY.

A philosopher has said that there are three classes of people in this world: one that learn from other people's experience, which is wise; one that learn by their own experience only, which is expensive, and another that will neither learn by their own experience nor by that of others—they are fools. His classification is inadequate. There is a fourth class—chumps. To it belong the principals of the following story.

Two heating men bid on a big "rush" job as though it was a government mail contract, with contingent advantages that would make the mare go whether there was any money in the contract proper or not. The successful bidder found himself seeking workmen and was obliged to take any kind of help he could find idle, which, of course, included chumps. The work progressed. One wing of the building was under heat. Another was ready to turn on. The weather was cold and the chumps on the job thought it would be a good idea to turn off all of the radiator valves in the heated wing (there was no other way to cut out the surface), so as to relieve the boiler while the other wing was being warmed up and tested. All hands flocked to the radiators and piping of the second wing to see that all was right, and left the boiler to act as judge and jury of the situation in the boiler room. As the steam condensed in the pipe leading to the cut-out radiators the poor boiler saw its water departing and kept getting hotter and hotter. While it was at a fever heat, the fitters, unforunately, concluded it was time to open the valves temporarily closed in the other wing; they did, and when the water fell back into the overheated boiler it brought in a verdict of "total wreck" and must be replaced with a new one. In the meantime the soon-was-to-have-been business of the building has been postponed for a time. It is assumed that the lesson was well learned.—Metal Worker.

A LESSON IN HOUSE LIGHTING.

Light fixtures are often placed without proper consideration of what the results will be. The Illuminating Engineer gives an excellent object lesson in the above illustrations, which show the advantage of a properly placed side bracket, and the difference of working while standing so as to cast a shadow on one's work.

Heating Capacity Ratings of House Boilers

Reports and Discussion on this Subject at the Convention of the American Society of Heating and Ventilating Engineers at New York in January.

The question of uniform boiler ratings was in the hands of two committees merged for the purpose and comprised the following members: Professor J. H. Kinealy, Professor John R. Allen, E. D. Densmore, P. H. Seward, A. B. Franklin, W. M. Mackay, H. A. Smith, W. L. Bronaugh and President William G. Snow. Of these a formal minority report was presented by Mr. Seward; a written adverse discussion of the majority report was presented by Mr. Densmore, and President Snow temporarily left the chair to explain his position on the question. A long and spirited discussion followed, resulting in the carriage of a motion putting all the information collected, including the reports, in the hands of a new committee to report at the next meeting.

Mr. Densmore's objections related to the table of ratings, for which he felt there was no scientific reason, that the appointment of the committee on boiler ratings, to consider claims of makers for higher ratings than given in the table, would be an arrangement detracting from the society's standing and that there is nothing in the report covering the rating of hot-water boilers. Mr. Snow objected also to the establishment of a committee on boiler ratings and the test code outlined. He believed it not a function of the society to rate boilers for makers and that it is in fact prohibited by the laws of the society.

Main Portion of Majority Report.

Your committee presents herewith in the table a rating of cast iron house-heating boilers, based upon the area of grate surface and the coal burned per hour per square foot of grate surface. In compiling the table, your committee has considered:

1. That the area of the great shall be the area of the opening in which the grate is placed, measured to the outermost limits of air openings.

2. That the boiler is to be used under average working conditions, carrying steam at 2 lb. pressure; that the draft shall be sufficient to burn the number of pounds of coal per hour given in the table, and that the coal used shall be a good quality of anthracite coal having a heating power of 13,000 B.t.u. per pound of dry coal.

3. The rating as given in the table means the number of square feet of direct radiation steam surface that can be carried by the boiler, based upon the supposition that each square foot of direct radiation steam surface emits 250 B.t.u. per hour with steam at 2 lb. pressure in the radiator and with air surrounding the radiator at a temperature of 70 degrees.

Rating of House-Heating Boilers.

Area of Grate. Sq. ft.	Coal Burned per Hour per sq. ft. of Grate. lb.	Total Coal Burned per Hour. lb.	Rating of Boiler Sq. ft. Radiation
1	2.67	2.67	82
1.5	2.96	4.44	140
2	3.59	7.18	226
3	4.21	12.63	390
4	4.55	18.20	585
5	4.88	24.40	780
6	5.06	30.36	975
7	5.24	36.68	1,165
8	5.36	42.88	1,405
9	5.48	49.32	1,650
10	5.60	56.00	1,890
11	5.71	62.81	2,125
12	5.82	69.84	2,360
13	5.93	77.09	2,595
14	6.08	85.12	2,915
15	6.23	93.45	3,235
16	6.35	101.60	3,485
17	6.46	109.82	3,730
18	6.51	117.18	4,010
19	6.55	124.45	4,285
20	6.58	131.60	4,545
21	6.61	138.81	4,800

This table is the result of a careful study of the whole question of house-heating boilers, and your committee recommends that it be adopted and used by the members of the American Society of Heating and Ventilating Engineers as giving the standard ratings of cast iron house-heating boilers.

Your committee recommends that a committee to be known as the committee on Boiler Ratings be appointed yearly by this society to act alone or, preferably in conjunction with similar committees appointed by other societies or associations to consider all questions that may arise in connection with boiler ratings, and especially those questions arising from improper or insufficient ratings of boilers. If a manufacturer of boilers shall consider that his boiler is entitled to a rating higher than the standard rating, and mittee on Boiler Ratings, and shall submit to it the results of tests made as hereinafter provided, the committee shall consider the matter and shall report its conclusions to the manufacturer of said boiler, and also to the society at its next regular meeting.

Testing Heating Boilers.

Your committee recommends that when a house-heating boiler is tested to determine its rating the method of testing shall conform as nearly as possible to the "standard" method of testing boilers prescribed by the American Society of Mechanical Engineers, with some slight modifications, as follows:

The test is to be started by building a wood fire, raising steam, and keeping the boiler under working conditions for at least one hour. Then the fire is to be drawn and a new one made, and coal is to be added as rapidly as possible until, approximately, 50 lb. of coal per square foot of grate surface has been added. In small-sized boilers the firing interval should, preferably, be about eight hours; in medium-sized boilers, about six hours, and in large boilers, about four hours.

The steam pressure shall be maintained as nearly as possible constant during the test; and the weight of steam made shall be determined either by weighing the water fed to the boiler or, preferably, by condensing the steam as it comes from the boiler, but in all cases the amount of moisture carried by the steam must be determined and correction be made therefor; and the feed water shall, where possible, be supplied to the boiler hot.

The coal used shall be a good quality of anthracite coal, having as nearly as possible a heating power of 13,000 B.t.u. per pound of dry coal; and the rate of combustion shall be nearly as possible as given in Table I. of this report.

Just before closing the test the ash pit shall be cleaned, and at the end of the test the grate shall be dumped; and the difference between the weight of carbon in one pound of the ash during the test and the weight of carbon in one pound of the ash and coal obtained when the grate is dumped at the end of the test shall be taken as the weight of combustible per pound of ash and coal left on the grate at the end of the test.

No test shall be for a shorter period than eight hours; and observations of temperatures, pressures, etc., shall be made at intervals of at least one-half hour.

Minority Report.

The following recommendations are submitted with reference to the subject of boiler ratings:

1. At the 1909 annual meeting the following resolution was passed and referred to Committee on Standards:

"Resolved, That it is the sense of this society that in the absence of any standard for rating steam and hot-water heating boilers, one should be established based on coal consumed per square foot of grate surface and efficiency."

2. It is recommended that the rate of combustion be determined as follows:

(a) Divide boilers into four classes: Small boilers less than 6 sq. ft. grate area; medium boilers, 6 to 10 sq. ft. grate area; large boilers, over 10 sq. ft. grate area; heavy-duty boilers over 20 sq. ft. grate area.

If boiler has magazine feed or fire pot of an irregular shape, the class to which it belongs shall be determined by means of effective area of fire pot on same basis as grate area specified.

(b) Fix the firing period for each class.

Small	boilers	8	hour	run on one firing.
Medium	"	7	"	"
Large	"	6	"	"
Heavy-duty	"	4	"	"

(c) maximum coal burned during one firing period to be 80 per cent. of the fire-pot capacity when filled to a depth specified by maker not to exceed centre of fire door or a total depth of 20 in. from top of grate bars, unless boiler is magazine feed when the coal burned must not be more than 80 per cent. of the magazine capacity.

3. It is recommended that the efficiency to be claimed be determined by actual tests, when boiler is operated in accordance with the foregoing division as to classes, firing periods and rate of combustion, using stove size anthracite coal as the standard fuel.

4. It is recommended that the capacity or rating be calculated as follows:—

Let C represent the pounds of fuel available for one firing period.

Let T represent firing period in hours.

Let E equal the total B.t.u. considered available per pound of fuel at boiler outlet not exceeding results shown by tests.

Then $\frac{C \times E}{T}$ represents the boiler capacity per hour in B.t.u.

If rating is desired in equivalent square feet direct radiation, divide capacity in B.t.u. by 250 for steam and 150 for hot water.

5. It is recommended that a standard test code be used in making tests to determine efficiency for rating, and a special heating-boiler test code committee be appointed by the new president to prepare such code embracing the conditions heretofore specified and report at the next annual meeting.

6. This method for rating heating boilers will give the widest possible latitude to individual manufacture and commercial requirements, as it provides for the classification of size and rate of combustion from which an accurate heating surface ratio can be determined by designer according to the efficiency which seems possible or advisible.

Methods of Testing Heating Boilers.

President Snow announced that the committee from the Nation Association of Master Steam and Hot Water Fitters, that was giving its attention to boiler rating, had requested that the topic methods for "Testing House-heating Boiler to Get the Most Accurate Data" be taken up and discussed.

E. A. May, said his firm's method of testing boilers is to build a wood fire and the water is brought to the steaming; then the wood is taken out and a new fire built and the new charge put in as fast as can be done, without chocking the fire, or in about a half hour. It is our intention to feed the boilers with water from a pressure tank and the temperature is recorded. The temperatures are taken at intervals of 10 or 15 minutes. No manipulation of the drafts are made during the test. We make tests to see how quickly the fuel can be burned and how long it can be made to last, and the efficiency under all conditions is recorded. Manufacturers are willing to answer any question that they can answer.

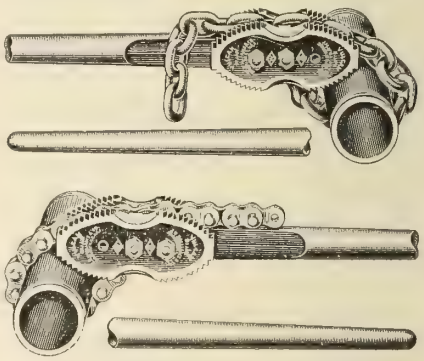
The water supply is obtained from tanks full of water, either still or kept in motion by stirring. As to the amount of heating surface and its relation to grate surface, there is a difference in every boiler, and the ratio is not constant. A square foot of heating surface in boilers may vary from 2,000 to 10,000 B.t.u. in transmitting heat, the surface having the same relation to the fire, but in different types and designs of boilers. After the fire is started, steam is generated and passes from the pipe through one or two separators, as may be used to catch the water driven over from the boiler. Some tests are under pressure and others not. The second separator seldom gets more than the condensation of the first separator. Three per cent. priming is seldom reached in any boiler that we have tested, and it is nearer one per cent. as the average. We test any boiler on the market that attracts our attention. A relatively small body of water enables a boiler to show a better efficiency than a larger body with the same amount of surface, in my opinion.

PLUMBER'S CALENDAR.

The Jas. Morrison Brass Mfg. Co., Toronto, have supplied their customers with a calendar, the top-piece of which is a green background with the firm name, trade mark and the words "Plumbers' Supplies" in gold letters. A colored illustration showing the interior of an up-to-date bathroom is the centrepiece. The figures of the calendar itself are large black ones, easily read when hung on the wall. The calendar should prove a useful one for the plumber's office.

NEW VULCAN WRENCHES.

J. H. Williams & Co., manufacturers of forgings, Brooklyn, N.Y., who in 1884 patented the "Vulcan" class of chain pipe wrenches, and which during the past quarter of a century, in both materials and manufacture have been vastly improved, now announce as the climax of their 25 years' experience in chain tools, the "Vulcan-Bijaw" wrenches—"chips of the old block" in general utility. The reversible jaws are readily turned end for end when teeth wear thus doubling the life and giving an "always ready" service of the tools. Material in studs fastening jaws to handle is of especially great strength and in case of accident repairs may be made on the



New Vulcan Bijaw Wrenches.

field by moving forward the rear stud as one bolt or stud will still provide working strength for the tool. The two studs or bolts through handle prevent spread of jaws when in use. The application of jaws to handle remains the same superior, perfect fitting, milled construction and has for so many years proved entirely satisfactory in the "Vulcan" wrenches. The company assert that though ruthlessly used and copied by imitators they were creators of the published chain-strength tests now standard and thoroughly maintained by them. This fact alone assures the necessary feature of the safety so necessary when operating tools on dangerous trestle work. A full line of the "Vulcan-Bijaw" wrenches in sizes for ½ to 12-inch pipe and fittings and with interchangable cable and flat link chains will be ready for the market, April 1, 1910, and catalogues will be sent on request.

Questions and Answers in Heating and Plumbing

Inquiries Solicited From Readers, Who Run Across Problems Which are Unusual—Just as You are Interested in Reading the Questions Asked by Another Man in Your Trade, so Will the Other Fellow be interested in Your Problems — Send the Queries Along and We'll Answer Them—or try to.

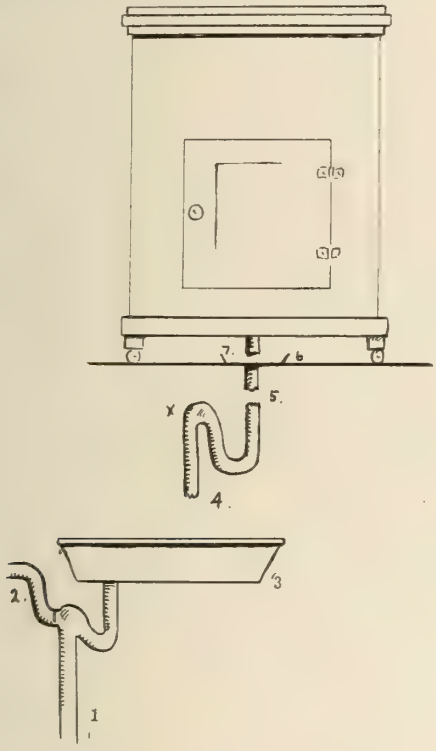
REFRIGERATOR CONNECTIONS.

Editor Plumber and Steamfitter.—Will you be kind enough to publish a drawing of the proper manner in which to connect up the drain to a refrigerator, and oblige one who reads your paper with great interest.

LEAD WORKER.

Winnipeg.

In response to our friend's inquiry we publish a drawing, which we think will be found correct in principle. The different points are numbered and explained, and we believe that no difficulty will be found in understanding the layout. No. 1 is the sink outlet to sewer; 2 the vent to sink trap, running to main vent line; 3 the sink in cellar; 4 the discharge of trap under refrigerator; 5 the broken connection (this run of pipe may be several feet); 6 the drip pan; 7 the outlet of refrigerator, and 8 the trap 1¼ inches in size.



Refrigerator Connections.

BLOWING OFF BOILER.

Editor Plumber and Steamfitter. — About how many times in the course of a season should the boiler for a low pressure steam heating job be "blowed off?"

What would cause such a boiler to foam or have an unsteady water line. In answering these questions you will greatly oblige.

CONSTANT.

London.

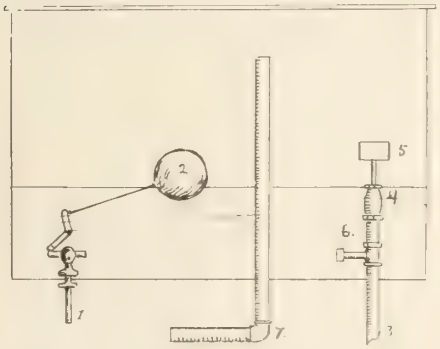
On a new job the boiler should be blown off after it has been run a day or two in order to get it thoroughly heated off. The oil, grease, dirt, etc., will to a greater or less extent come back to the boiler and should be removed. When a job is being run steadily all winter we consider that about once a month would be sufficient. The operation can be performed upon a mild day in order not to let the house get too cold while the steam is not on. The boiler would foam because of the presence of dirt, grease and oil in the water. This would also cause an unsteady water line. There are, however, other reasons for an unsteady water line, which may be remedied by placing an equalizer upon the boiler as explained in a previous number of The Plumber and Steamfitter published last year.

PRESSURE ON HEATING APPARATUS.

Editor Plumber and Steamfitter,—Will you give a drawing showing some way to put a pressure on a hot water heating apparatus? I would like something that I can construct at my shop if possible.

ST. LAWRENCE.

Quebec.



Home-made Expansion Pressure Tank For Pressure Hot Water Heating.

We publish a drawing which will work all right. It is numbered and so described that one can see at a glance how it works. We would state, however, that the cost and time required to put together would probably bring its cost up to the price charged by some of the pressure apparatus now on the market. Besides the valve 4, is liable to get stuck in which case the apparatus is rendered dangerous.

No. 1 shows ½-inch supply pipe to supply the tank; 2, the ball cock and float which prevents water rising to the overflow; 3, the expansion pipe connected to hot water system; 4, the safety valve; 5 the weight on safety valve (about 10, 12 or 15 lbs.); 6, the swinging check valve which supplies water to system, but prevents water coming back into tank, the water can only get into tank through safety valve at 4; and 7, the ¾-inch waste pipe.

NEW TORONTO SEWAGE DISPOSAL.

A sewage disposal plant is to be installed at New Toronto. The plant will consist of two large concrete tanks, covered with reinforced concrete, and hermetically sealed, into which the sewage will be conducted from the trunk sewers. In these tanks the sewage will be liquified through bacterial action, and the few solids which remain will settle and be drawn off by sub-drains. The liquified sewage will be conducted to three separate filter beds, over which it will be sprinkled, and through the action of the oxygen in the air and the bacteria in the beds will flow into Lake Ontario clear, pure water.

Around the liquifying tanks and filter beds evergreen and deciduous trees can be planted, and lawns laid out for the benefit of the residents of the locality. As soon as plans are ready, tenders will be called for, and the work of construction will commence as soon as the frost permits.

NEW METAL FOR PLUMBERS' GOODS.

A new white metal has been patented by Chas. F. Ackerman, Cleveland, Ohio, U.S., (Patent 939,938, Nov. 9, 1909), which it is claimed is nearly as white as silver and can be cast solid into plumbers' goods, such as faucets, cocks and valves, at a less cost than they can be made of brass, and nickel plated. The alloy consists of the following:

Copper	60 parts.
Zinc	23 parts.
Nickel	12 parts.
Lead	5 parts.
Aluminum	1½ parts.
White Arsenic	1½ parts.

The copper is melted in a crucible and 3½ parts of borax added. The white arsenic is then stirred in and finally the nickel introduced. When melted, the zinc, lead and aluminum are added and the mixture is ready for casting. It is claimed by the inventor that the hardness, whiteness, and power to resist corrosion and tarnishing adapt it to the manufacture of plumbers' fittings.

Gossip of the Plumbing and Heating Trade

Items Gathered in all Parts of Canada—Letters Invited From Subscribers, Giving Particulars Regarding Changes in Firm Names, Contracts Secured, Novel Methods of Advertising or Other News—Photos of Anyone or Anything Connected With the Trade Also Welcomed.

La Compagnie Collard, plumbers, Montreal, have dissolved.

Lavigneur & Larue, plumbers, Montreal, have been registered.

Pratt & Co., Montreal, heating contractors, etc., has been registered.

Ville Marie Plumbing Company, Ville Marie, Que., is stated to have assigned.

W. Mellette, tinsmith, Wetaskiwin, Alta., suffered some loss through fire in his premises recently.

H. D. Garlock and A. H. Westhaver are opening a tinsmithing and hardware business at Saskatoon.

E. F. Geiger, plumber, of Victoria, was an unsuccessful candidate for the office of city alderman.

The tinsmith and hardware business of R. Tait, Arnprior, is advertised for sale.

G. Robinson, Weston, will open a plumbing and tinsmith business at Elora.

J. D. Murdock, plumber and tinsmith, Welland, is advertising his business for sale.

The Guelph civic light and heat department promises a reduction as soon as Niagara power is installed.

The water rates at Guelph were given another ten per cent. reduction. The reduction was due to the reduced consumption of coal.

John P. Hockin, general superintendent of the Taylor-Forbes Co., Guelph, and former superintendent of the Dominion Radiator Company of Toronto, died at Guelph on February 3.

A. W. Lamontagne has severed his connection with Warden-King, Montreal, and is now representing the Gurney-Massey Co., in the western part of Montreal and Quebec City.

Rodgers, Wray & Greenway, plumbers and tinsmiths, Grimsby, Ont., have dissolved. Mr. Rodgers and Mr. Greenway will continue the business, under the name Rodgers & Greenway.

Operations for boring for natural gas have been ordered to be begun at once by the council of Port Arthur. The International Lighting & Heating Co. there state that natural gas will reduce the price one half.

H. H. Elford, of Elford & Cornish, Saskatoon, who has been spending a couple of months holidaying at Halifax, Boston, and other points, was a visitor in Toronto this week on his way west to resume business activities at the "Hub" for 1910.

The Ideal Mfg. Co., Detroit and Windsor, makers of plumbing materials, have appointed the following Canadian sales managers for 1910: Louis K. Markey, sales manager at headquarters; M. A. Villeneuve, Ottawa; Geo. E. Griffith, Vancouver, and Jos. H. Leonard, Winnipeg.

The board of health inspectors of St. John, N.B., are conducting an active campaign against landlords and others who have not complied with the law as regards installing proper sanitaries on their premises. More than 1,000 people will have to make repairs to their sewerage facilities.

The journeymen plumbers of Halifax have served notice on the various plumbing firms that after May 1, they want forty cents an hour for 48 hours a week. The increased cost of living is the main reason for the demand. The Master Plumbers' Association has made no reply as yet.

R. H. Ballantyne, who recently severed his connection with W. Tifier & Sons, plumbers and steamfitters, Brantford, has entered into partnership with R. G. Ballantyne at the same place.

L. E. Labrecque, Ltd., plumbers and contractors' supplies, Quebec, have obtained a charter.

The Gurney Foundry Co. has purchased property at 740 and 742 Yonge St., Toronto, for $30,000, on which they will erect a retail branch store and warehouse. The lot has a frontage of 32 feet on Yonge St., running back 286 feet to Balmuto St. When the new place is completed the present Gurney store on Yonge St., near Shuter, Toronto, will be closed.

Harry Read, of the Regina Plumbing and Heating Co., Regina, who spent the past month in the east, visiting his old home at Harrisburg, and friends in Galt, Toronto and Montreal, has returned to his new home in the west.

C. R. Frost of McKnight & Frost, Edmonton, was in Toronto last week for a short visit. He has since returned to Edmonton.

One of the plumbers working at the Parliament Buildings, Toronto, Alfred Pellow, of Eglinton, was painfully injured in the eye the other morning. He was cutting a piece of lead pipe with a chisel when part of the chisel broke off and hit the eye ball. Dr. Hodgetts, secretary of the Provincial Board of Health, bound up the wound, and then sent him to Dr. Ryerson, on College Street. It is probable that the sight will be saved.

Some radical changes are to be made shortly in the rates charged London citizens for water meters, as a result of the commissioners having gathered information which shows that the charges are exorbitant as compared with those in other places. Engineer Moore stated that the average cost of the meters is $12, and that they last ten years. The minimum charge made by the city now is $4. It was stated that in Berlin meters are rented at $1 per year.

T. McAvity & Sons have under consideration the matter of removing their brass foundry from St. John, N.B., to some western city. Thomas McAvity in discussing the proposal, said that a decision would be reached in a month or so. He said Port Arthur, Toronto and Hamilton were among the places to which the business could be moved to advantage. Most of the business done by the foundry and manufacturing branch of the firm is with the west. If one of the western cities is selected the plant at St. John will be shut down and all the machinery and patterns transferred to the new site. The foundry employs a large number of hands, and is the mainstay of about 1,000 people.

J. Morrison, of Morrison Bros., Lindsay; D. R. Dundas, Coubourg; W. D. Muckler, Oshawa, with his brother, Fred, of Kingston; D. Higgins, of Higgins & Large, Brampton, and T. Heatley, Brampton, called last week on the Toronto plumbing supply houses.

A. P. Horsman, manager of the Gurney Standard Metal Co., Calgary and Edmonton, died of pneumonia on Tuesday last, Feb. 8, while on a visit to the branch at the latter city. He had been manager of the company since its inception, making his home in Calgary. Previously he had been with the Ashdown Hardware Co., of Winnipeg, acting as manager of the Calgary branch. He was an eastern man originally.

Western Supplies, Ltd., is the name of a new plumbing supply company incorporated last month with headquarters at Edmonton and a capital of $100,000. The provisional directors are Andrew Lee, G. F. McKnight and J. A. Lockerbie. All are at present master plumbers of Edmonton. Mr. Lee is president of A. Lee, Ltd.; Mr. Lockerbie has his own business, and Mr. McKnight is a member of McKnight & Frost. The company is negotiating to take over the existing business of the Edmonton branch of an outside concern, but the matter is not concluded as yet.

New Buildings, Water and Sewerage Systems

Opportunities Offered by Municipalities and Private Enterprise for New Plumbing, Heating, Ventilating or Sanitary Systems—Work Being Undertaken in Every Section of the Dominion.

Municipal Undertakings.

Hamilton's west end sewer will cost $110,000.

A $25,000 sewerage system may be constructed at Duncan's Station, B.C.

Another reservoir has been recommended to be built at Kamploops, B.C.

Edmunston, N.B., has agreed with the G. T. P. to put in a waterworks system.

The civic officials of Fort Erie, Ont., favor the construction of a waterworks system.

City Engineer Rust, of Toronto, in his estimates for 1910 asks for $225,151 for new fire and water mains.

Vancouver will this year add from 14 to 25 miles to its waterworks system. Mains will be constructed on 40 streets.

City Engineer Ker, of Ottawa, has laid before the Board of Control a drainage scheme, which will take three years to complete, and will cost $350,000.

Tenders are being called for by J. W. Truesdale, city clerk, of Saskatoon, Sask., for materials required for house sewer and water works service connections, etc.

Calgary water commissioners recommend that a by-law for $242,000 be introduced and submitted for a vote of the ratepayers for the construction and extension of water mains in that city during 1910.

Contracts for new sewers at Toronto have been awarded as follows: Dingwall Ave., Excelsior Construction and Paving Co., $707; Albany Ave., Excelsior Construction and Paving Co., $1,337; Campbell Ave., National Contracting Co., $829.

The Alberta Provincial Board of Health have just issued an order that all municipalities in the province shall have proper and satisfactory sewage disposal systems installed bofere December 31, which will necessitate the expenditure of nearly $2,000,000.

The Kingston Waterworks Committee have decided that a new intake pipe should be laid as an auxiliary to the present water pipe, and the superintendent was instructed to prepare the necessary data to be submitted at the next meeting of the committee. Rough estimates place the cost at from $20,000 to $25,000.

About twelve per cent. of Toronto's new high level intercepting sewer is completed. That is, of the 30,000 feet of sewer that are to be laid, about 3,500 feet are already under the ground. At present two gangs are at work. One is working in the east end, and the other in the west end of the city. In all a battalion of about 200 men are engaged in the work.

Public Buildings.

St. John's, N.B., will erect a new city hall.

The Lutherans, New Westminster, will erect a new church.

The armory at Regina will be erected at a cost of $100,000.

A $100,000 twelve-roomed school will be erected at Edmonton.

A $76,000 station will be built by the C. P. R. at Woodstock, N.B.

The new wing of the Toronto Isolation Hospital will cost $102,000.

A new church will be erected by the Roman Catholics, Hamilton.

The Chester (Toronto) Baptist Church will build a new Sunday school.

Tenders are being called for the heating of the county gaol at Barrie.

A new school on Bank St., Victoria, will be erected at a cost of $16,900.

A new high school and a post office are under consideration at Weston, Ont.

Work on the new $75,000 wing of the Holy Cross hospital, Calgary, has begun.

The mayor of Tilbury, Ont., has recommended the construction of a new town hall.

Welland Presbyterians intend to construct a new school room, to cost about $8,000.

The plans for remodelling the city hall of London are expected to be submitted shortly.

The Great Northern Railway will erect a passenger and freight depot at Port Kells, B.C.

Arrangements are being made for the erection of a new church and school at Fraser Mills, B.C.

The Havelock, Ont., council has decided to install an up-to-date heating system in the jail and court house.

The Board of Education at St. Thomas, has secured two suitable building sites for the new school to be built there.

The National Transcontinental Railway Commission have agreed on Champlain Market, Quebec, as the site for their terminal.

At the annual meeting of the Welland County Agricultural Society, the directors recommended new buildings to the value of $13,000.

A school by-law will shortly be voted upon at Victoria to spend $35,000, to build a new school and extend the Victoria West school.

The Saskatoon hospital board is asking the civic authorities to submit a by-law authorizing the raising of $110,000 for improvements and enlargements.

At a recent meeting of the Victoria city council, Ald. Humber moved that a sum of $15,000 be spent on the instalation of three or more public conveniences in the business section of the city. The matter is to come up later for final discussion.

The J. McDiarmid Co., Winnipeg, were awarded the contract for alterations to the Dominion Building at Lethbridge at $7,777.50. The alterations to the old post office at Winnipeg were awarded to the same company.

General Building.

The Bank of Hamilton will erect new premises at Kincardine, Ont.

An apartment house will be erected shortly at Vancouver by J. H. Singer.

A six-storey apartment house will be built at Toronto, by David Lavine.

Nicholson & Bain, grocers, Fort William, will build a wholesale house in the spring.

Extensions and alterations planned for the Imperial Hotel, Brandon, will cost $70,000.

A syndicate will erect an apartment house at Ottawa, in the Sandy Hill district.

A permit has been issued to J. H. Todd, Victoria, B.C., for a dwelling to cost $6,000.

G. H. Walton is contemplating the erection of an apartment house at Winnipeg, to cost $320,000.

Theo. Daouts, Montreal, is preparing plans for an extensive amusement enterprise to be erected at Isle Grosse Bois.

Jos. Perrault, Montreal, is preparing plans for the "St. Georges" apartments, to be erected there for George Poliquin.

Mr. Scott, Montreal, will shortly erect two houses at Westmount, for which plans and specifications are being made.

The Lowndes Co., Toronto, has purchased property at that place, and they will shortly erect a large warehouse there.

Tenders addressed to R. E. Mason, Fort William, will be received up to February 21 for a residence for F. R. Morris.

The members of the Union Club, Victoria, have decided to erect new quarters. The new building will cost about $80,000.

Plans for five apartment houses are being prepared by P. C. Samwell, Winnipeg, at an estimated expenditure of $205,000.

Plans for the proposed ten storey building, at Bank and Sparks street, Ottawa, have been prepared by C. P. Meredith.

A store and apartment block, to cost approximately $52,000, is to be erected shortly for A. E. McEvoy and E. W. McLean, at Vancouver.

Construction work is being rushed on the Prince Arthur, the new six-storey C. N. R. hotel, to cost $250,000, which is being built at Port Arthur.

The Royal Edward Hotel Co. has been formed at Montreal, with a capital of $90,000; and has purchased the Carsley block which will be remodelled extensively for use as an hotel.

A company known as the Masonic Temple Association of Windsor, with a capital of $50,000, has been chartered by the Ontario Government to build a Masonic Temple at Windsor.

Work will be commenced in a month on the enlargement of the hotel at Vancouver. The plans provide for an hotel of six hundred rooms, making it larger than the Royal Alexandra in Winnipeg, and the finest of the C.P.R. system.

J. H. Todd, Victoria, has awarded the contract for the erection of a large three-storey building, to be used as a modern apartment house, to Geo. Mesher. The price will be between $30,000 and $40,000. Work will commence at once and will be finished this summer.

The following building permits have been issued recently at Winnipeg: H. Hirsh, two dwellings, $2,000 each; O. Sturseter, two houses, $2,000 each; Mrs. G. Bradshaw, house, $3,000; Morgan & Daykin, five houses, $2,000 each; Arni Eggertson, house, $3,500; J. Campbell, house, $3,000.

SQUARE TO ROUND BRANCH.

To draw pattern for branch, first draw elevation, plan and side view. Divide half-circle of plan into twelve equal spaces. Connect lines from starting point, No. 1 in plan. The same method is applied to elevation. Draw all necessary lines to obtain profile, also half diameter of pipes. By placing dividers on plan, namely —1, slant heights are obtained, and 0—1 represents height desired. 1—2 from plan, 1—3, 4, 5, 6, 7 are placed on the profile line. These numbers on profile line, 1, 2, 3, 4, 5, 6, 7, are taken from heights in elevation. When all heights are drawn, develop the pattern as illustrated.

Next draw hypotenuse, 1—1—1; then space 1—2 from profile, also 2—3, 3—4, 4—5, 5—6, etc. To obtain sweep of circle place dividers on radius and scribe from 1—1 on pattern, and continue on with the same method as applied in the above lines.—B. J. Reynolds in American Artizan.

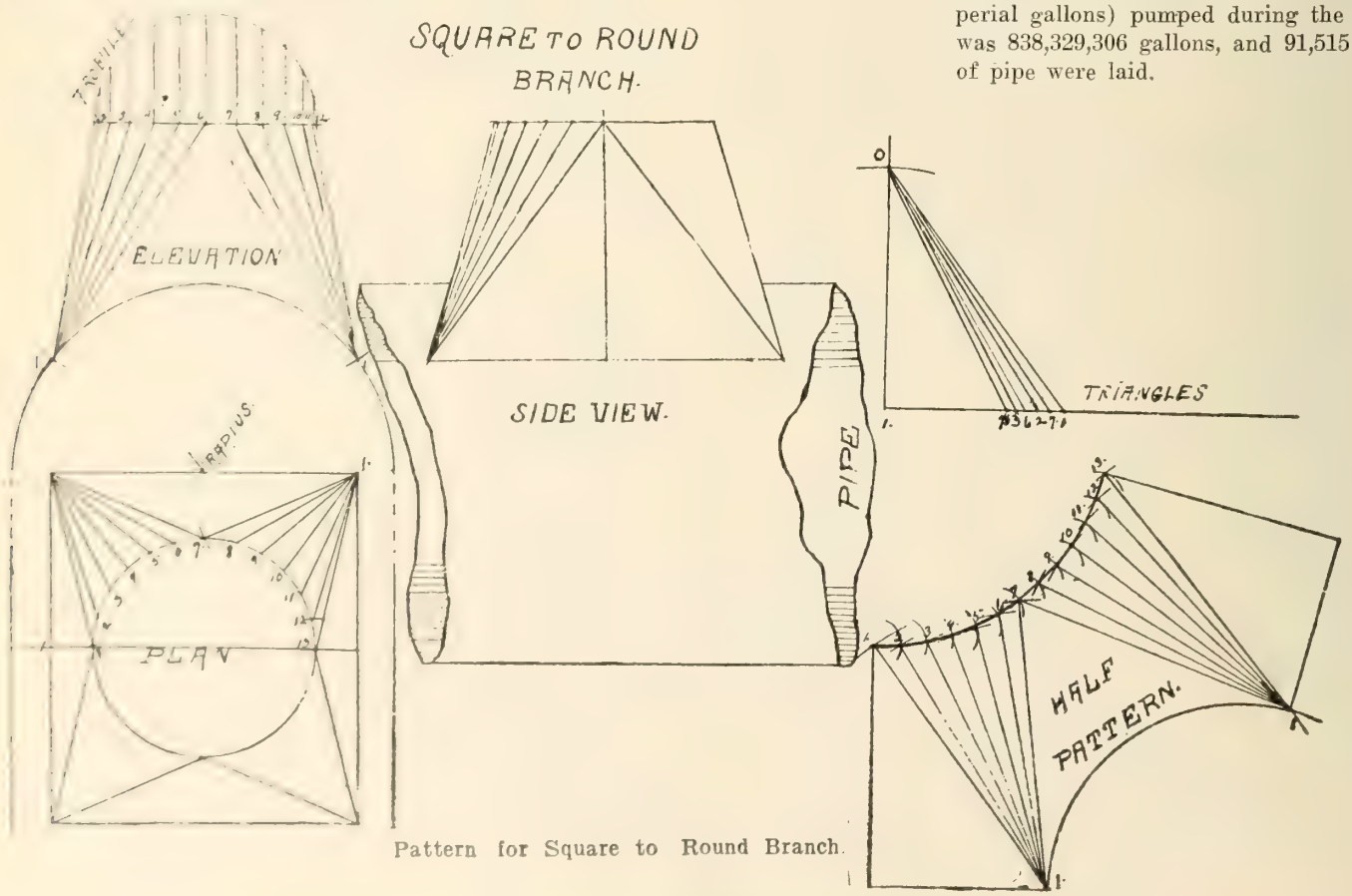
THE TRADE AT CALGARY.

A Calgary master plumber, asked regarding the condition of trade, writes as follows: "There are eighteen master plumbers having establishments and doing business in Calgary. Nearly all these do steam and hot water fitting as well as plumbing. There is an association of the master plumbers in this city, which has been in operation for a year past. They are all making money since the organization of this association, and we know of no friction since they have been in operation. On January 14 the Master Plumbers gave a banquet in one of the leading hotels, which was a first-class and very successful affair.

"Our idea of opening a business is not to buy anybody out, but to start yourself, putting on a good sign over your shop and advertising yourself in the newspapers. Premises suitable for this class of business can be readily obtained. There is one firm here now, the owner of which started on nothing, and by shrewd business tact is now worth considerable money.

"As to the circulation of money in Calgary, there is plenty of it. When work is done, you send in your account and you get a cheque for it. Of course, in all new towns, where there is a moving population, sometimes contractors are tempted to go past their means, and once in a while a sub-contractor gets left; so any new man coming in would have to be careful and endeavor to keep in close touch with his wholesale house and get information from time to time as he goes along, so as to be well posted as to who he is working for, and in this way his chances of losing would be very small."

Water Commissioner James L. Raymur, of Victoria, has made his report for 1909. The department now possesses assets of $1,647,199.70, with liabilities of $987,453.97, leaving an excess of assets over liabilities of $659,745.73. The balance at the end of the year is figured at $59,910.39. The quantity of water (imperial gallons) pumped during the year was 838,329,306 gallons, and 91,515 feet of pipe were laid.



Pattern for Square to Round Branch.

PLUMBING AND HEATING MARKETS

MONTREAL.

February 14.—No price changes are announced in the markets. Supply houses report plenty of trade. Good orders have been booked for the first boats, while soil pipe and other lines have been shipped in large quantities to outside points. There is an excellent tone all the way round, and very little complaint is heard either as to present trade or as to prospects. Some plumbers are still very busy, but the majority are now on the slack side, and jobbing work is the principal shop employment. Every week, however, seems to bring an improvement in the building prospects. Landlords are much keener on building, and although the large contracts likely to materialize during the early part of the spring are not very numerous, residences and smaller businesses look very healthy.

Manufacturers are busy trying to work up some stock for the spring demand, but as many are still on old specifications it looks as if there would be shortages in some lines. There are evidences that users are commencing to buy ahead in view of this, and the fact that prices look to be hardening all the way round.

Soil Pipe.—Soil pope is still going out strongly, and manufacturers have all that they can do to supply the present demand without considering the future requirements of the trade. The market is firm, and we quote, light 60 off, and heavy 70.

Lead Pipe.—No change in prices is reported. Fair trade is offering, and a greater desire to buy for future requirements is noticed, We quote: Pipe and waste at 25 off; traps and bends at 50; caulking lead, 5c per lb.

Solder.—With the jobbing work fairly good solder is moving out well. Plumbers are now carrying more stock than they did. There is no change in prices, and we quote half and half 20c, wiping 18½.

Iron Pipe.—Orders show improvement, and good trade seems opening up. Some heavy orders have been booked for early boats. We quote: ¼-in. black, 63; galvanized, 48; ⅜ black, 59; galvanized, 44; ½ black, 69; galvanized, 59; ⅝ to 4-in. black, 71½; galvanized, 61½.

Radiators and Boilers.—The immediate demand trade still keeps up and jobbers are satisfied with business. Prospects look excellent for future trade, and manufacturers are working hard to get in good trim for it. The market is firm, and we quote: Steam boilers, 60 and 5; hot water boilers, 50 and 10; wall and hot water radiators, 50 and 7½; steam radiators, 50, 7½ and 2½ per cent.

Scrap.—There is no change in the market. Buying is quiet. We quote: Heavy copper and wire, 11c; light copper bottoms, 10c; heavy red brass, 10c; heavy yellow brass, 8c; light brass, 6½c; tea lead, 2½c; heavy lead, 2¾c; scrap zinc, 3c; cast, $15.

Metals.—There is no change in the markets with the exception that domestic lead is 5c cheaper. We quote: Tin, 35c; copper, 14½c; imported lead, $3.75; domestic lead, $3.70.

TORONTO.

Feb. 14.—There is a slightly improved feeling apparent in the plumbing situation, and the market is still firm. There are no price changes, nor can it be said that any particular line holds the centre of the stage.

Next month should see a brisker appearance about all the supply houses, as goods will be moving in volume. At present, booking for March delivery is pretty satisfactory, although nearly every house says they could look after more business.

Master plumbers report the condition of present work as good. There has been sufficient new work going on all winter to engage the attention of all hands, and plumbers generally say the jobbing work all season has been heavy.

Enamelware.—The situation in this line is unchanged from conditions prevailing since the beginning of the year. Prices hold firm and unchanged. Manufacturers and supply men are stocking up in anticipation of a big business year and a heavy demand on baths, sinks and closet combinations.

Solder.—Sales continue good, the demand being for all grades. Prices range from 17c to 20c as the outside quotations. Wiping runs from 17c to 18½c; and half-and-half from 18c to 20c.

Lead Pipe.—Prices remain at the old figures, and sales are good. Pipe and waste are 25 per cent. off; caulking lead is 4¾c, and traps and bends, 50 per cent. off.

Boilers and Radiators.—Prices and conditions remain as at last issue. Preparations are being made by manufacturers in anticipation of very big business. Next month should see the beginning of shipments. Hot water boilers and radiators are 50 and 10 off, and steam radiators the same with an extra 2½ off. The change in the terms of credit may be said to have slightly firmed things up.

Iron Pipe and Fittings.—All lines of pipe—large, small and medium—are fair sellers. Prices are unchanged. Standard bushings range from 60 to 70 per cent. and malleable bushings 60 to 65 per cent. Nipples are 70 to 75 and 10.

Soil Pipe.—Present prices hold steady, though some uncertainty has been expressed regarding the future, due to the failure of the trust across the line. Light pipe is 60 and fittings 70 per cent.

Brass Goods.—Brass manufacturers report steady and satisfactory business, with a slightly firmer tendency. High grade compression work is 60, with standard at 70 per cent.; fuller work is 70 per cent.

Metals.—Tin, slightly easier, though unchanged in price for small lots, 35c; copper, unsteady, because of speculation, 14c to 14½c; lead, imported, $3.85, domestic, $3.75. Old metals: iron, 8c 11c; copper, 9c to 11c; lead, 3c; zinc 4c.

IDEAL GAS STOVES AND RANGES.

Catalogue No. 14 of The Ideal Mfg. Co., Detroit and Windsor, just issued, is devoted principally to a description of their 1910 gas stoves and ranges and gas appliances generally.

The Ideal Mfg. Co. claim to be the originators of the elevated side oven type of gas range, which since its introduction has proven to be a popular and practical type of gas stove. The making of gas water heaters, gas parlor heaters and independent gas broilers is an important branch of the Ideal Co.'s business, as is also the manufacture of closet combinations, cast iron specialties, and, generally plumbing supplies and materials.

TRADE NOTES.

J. C. McRae, of the Superior Plumbing and Heating Co., Fort William, who lately came east on a business trip to New York, paid visits to various places in Ontario before returning to his home.

A. O. Campbell, manufacturers' agent, Vancouver, has been appointed representative in British Columbia, of the King Radiator Co., Toronto. Mr. Campbell has had a long connection with the plumbing and steamfitting trade on the coast and ought to capture a good share of the trade in this line.

Mr. Irvine of the E. Leonard engineering firm, St. John, N.B., is in Sussex making some alterations to the heating system in the offices of the Martime Publishing Co., whereby the exhaust steam from the engine will be utilized for heating purposes and thus a great saving of the live steam will be made.

Condensed or "Want" Ads.

BOOKS FOR PLUMBERS.

PRACTICAL HINTS ON JOINT WIPING, for beginners in plumbing.—This book contains two original articles on joint wiping by experts, together with a selection of letters and articles on various important phases of the subject. 66 pages, 41 illustrations. Price 25c.

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DOES YOUR FIRE INSURANCE POLICY protect you? There are points in connection with fire insurance policies that need expert handling to secure proper protection. We are Fire Insurance Experts. We can safeguard your interests, and procure the lowest rates. Mitchell & Ryerson, Confederation Life Bldg., Toronto.

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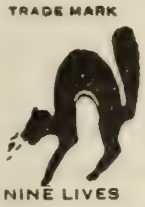

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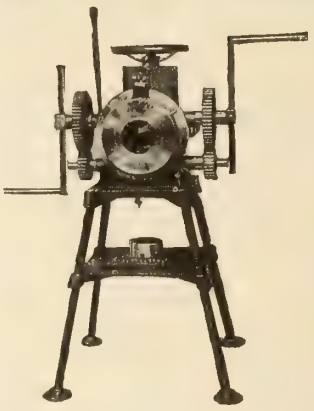


Loew Victor Pipe Machine

completely covers the needs of the plumbing and heating contractor in pipe threading.

Its usefulness in this field is of the widest, and the returns from the money invested will soon exceed the original amount.

Let us tell you just what the Loew Victor will do for you

Write.....

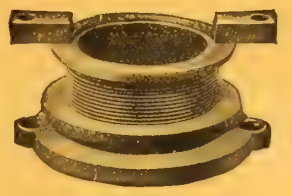
The Loew Manufacturing Co.

CLEVELAND, OHIO

Agents for Ontario and Western Canada, The General Supply Co., Ltd., 219 Bank St., Ottawa, Ont.

No. 21 BEAVER DIE STOCK

Equipped With Universal Chuck



Showing Detachable Leader Screw and Ring

Number 21 "Beaver" cuts 1-in., 1¼-in., 1½-in., 2-in. pipe. One boy can successfully operate this tool.

It is our old No. 2 greatly improved, threading from 1 to 2-inch pipe without changing dies. It has a new centering device for fastening the stock to the four sizes of pipe. Does away with all bushings. The rear opening is large enough to take in a 2-inch coupling for threading short nipples. The parts subject to wear are detachable and may be replaced at slight cost.

30 DAYS' FREE TRIAL OFFER

To prove our claim that "Beaver" Die Stocks are the *cheapest*, *most accurate* and *fastest Pipe-Threading Tools* on the market, we will send one on 30 days' free trial. If it does not give you better, quicker service than any Die Stock you ever saw before—send it back at our expense. This is a genuine offer—it costs you nothing to investigate.

Borden - Canadian Company, 66 Richmond Street East Toronto, Ont.

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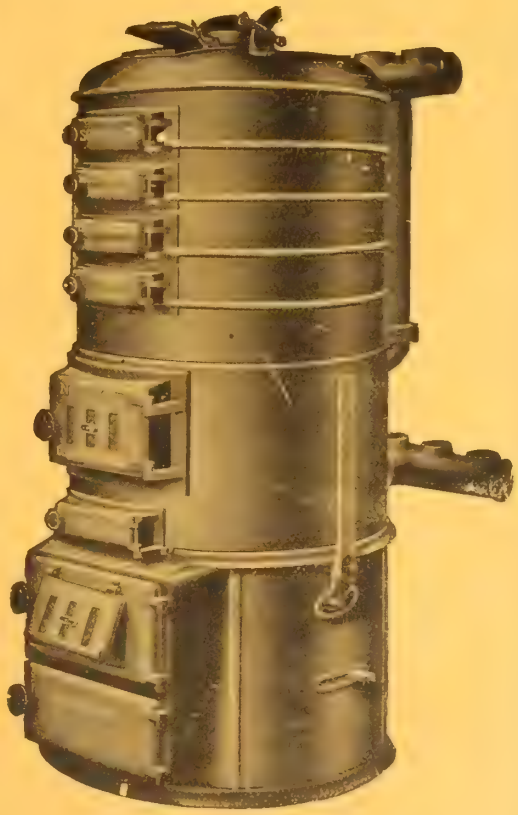
With A Small Coal Bill

This is the story of every householder who has installed a

"SOVEREIGN" BOILER



It adds greatly to the selling value of any building. It has a patent top damper, individual clean out doors, clinker door, high set feed door and sifting grate between the fire pot and the ash pit.

These features all help the smooth operation of the "SOVEREIGN" and save coal.

Here's a line that is a pleasure to handle!

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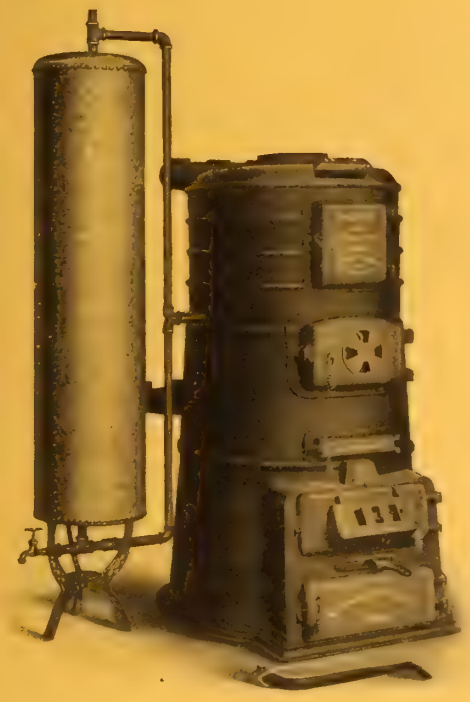
LONDON, ENG., 88 Fleet St. E.C. NEW YORK, Rooms 1109-1111, 160 Broadway

Vol. IV, No. 4 (New Series). Publication Office : TORONTO, MARCH 1, 1910. Old Series, Vol. XXII. No. 5

"It's Just as Good"

—— as ——

The Daisy



is the talk some people use when they try to sell their boilers, yet, unconsciously they pay a tribute to the DAISY'S WORTH and PRESTIGE.

There is but One Genuine

that is just as good, and it is the incomparable, unapproachable pioneer of HOT WATER Boilers, 30,000 of which are in active service—its name, need we tell you, is : : : :

The Daisy

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No Frost No Leaks Built to last a lifetime

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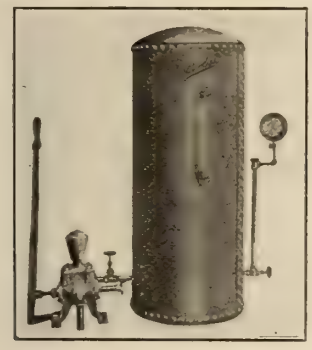

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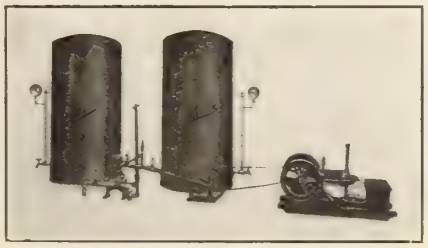

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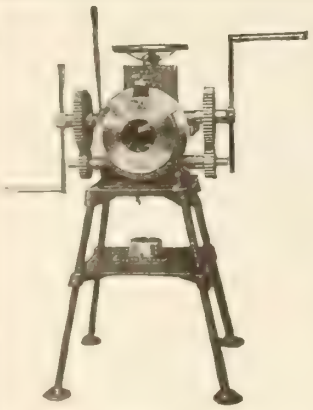

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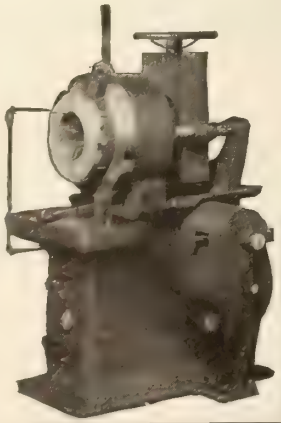

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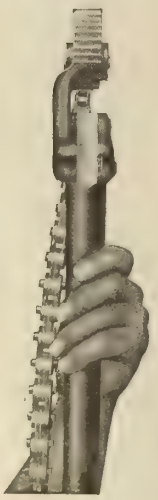

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Circulating amongst Plumbers, Steam, Hot Water and Gas Fitters, Sanitary Inspectors, Heating and Ventilating Engineers, City Engineers, Boards of Health, Architects, etc.

TORONTO, MARCH 1, 1910

EDUCATE YOUR CUSTOMER.

The more the plumber keeps in mind the fact that the purchaser of sanitary ware needs education on the subject, the larger will be his orders.

It is only within comparatively recent years that a demand has sprung up for luxuriously fitted bath rooms, and this demand is almost entirely due to education of the public.

The fact that the United States leads the rest of the world in the demand for luxurious bath rooms and fittings points to the fact that the public has been awakened by the tremendous amount of advertising of sanitary ware which has been done by the manufacturers.

But this education, to a large extent, is only accomplished by putting illustrations before the people. It remains for the retail dealer to complet the work by verbal argument and by showing at close range the uses and value of well-equipped bath rooms.

The retail dealer must put before his customer all the many advantages to be gained by well-appointed instalations. The customer is not sufficiently acquainted with their value to be able himself to suggest fine fittings. He must be shown the many reasons for increased expenditure along this line.

It is hardly necessary to impress the fact that nothing sells sanitary ware like showing it and that the best help toward large orders is a large stock, but the importance of making helpful suggestions should constantly be borne in mind. The aim of the retail dealer should be to give each customer the selling argument, which will most appeal to him.

The newer the argument, the better, especially if it be sound. Make the selling argument fit in with the needs of the buyer, or, at least, with his immediate interest.

For instance, the man who is fitting up a bath room in a house, which he has purchased, not as a dwelling but as an investment is not likely to be so much interested in the hygenic properties of a well-fitted bath room as he is in its effect on his investment. Show the man who is buying or building and selling house properties that a well-fitted bath room will do more to increase the value of his investment than any other form of expenditure, and he will immediately take to your suggestions.

Any real estate dealer will tell you that more people buy houses because they like one thing well than because they are attracted by a great number of suitable features.

Thomas E. Dockrell, in Modern Sanitation, tells of a speculator in house property in an eastern city, who built five houses to sell at $5,000 apiece. He fitted up four of them with the ordinary bath room to be found in houses of this class, with bath, lavatory, etc. The fifth house was exactly the same as the other four with the exception of the bath room, which he fitted very luxuriously with shower, spray, douche and sitz appliances. The extra expenditure amounted to $300, but he sold the house for $6,000, or an extra profit of $700.

He immediately put up four more houses, fitting them with bath rooms on a scale far finer than is usually found even in houses at double the money. He sold these houses in no time at $6,000 apiece, although the increased cost, owing to the excellence of the bath rooms was only $300 more than that of the houses which he had sold for $5,000.

Bear this incident in mind when you are talking bath rooms or bath room fittings to customers, who are dealing in house property as an investment. The man who tries the experiment will find it extremely profitable to him, which, of course, will mean larger and more profitable orders for you.

TRADE ORGANIZATION THE REMEDY.

Considerable dissatisfaction has existed recently amongst plumbing supply men, owing to the peculiar methods adopted by one of the largest houses in securing business. The trade has been in an unsatisfactory condition for some time past, and the unfair competition of the house in question has not tended to better things to any extent. The matter was discussed at a meeting at London last week, but it remains to be seen if the objectionable methods are discontinued.

The supply men are in pretty much the same position as the masters, prices in each case being cut to a point where it is difficult to show a profit on business done. What seems necessary is the organization of both branches of the trade along educational lines. By getting together and discussing business matters, more can be accomplished than by attempts to establish price agreements.

THE BUSINESS END OF THE SHOP.

The coming building season promises great business for the plumbing and heating trades, and it is up to master plumbers to make the most of their opportunities. And in alluding to opportunities, we are not thinking of the jobs themselves, but of the revenue which they should bring to the shop. Has every master plumber decided this year to conduct his business on thorough business lines; to exact from his customers every cent they owe him? Or, in other words, is he going to see that he charges what a job is worth; that this amount is entered in his books, and that the money is collected promptly?

The general run of master plumbers are not business men so far as office work is concerned. Their training, while making them excellent plumbers, has not given them any insight into clerical work, and the result is that unless a shop can afford to carry a clerk to look after the books, things are conducted on very careless lines. It is hard for a master plumber to have to look after everything. To go out, maybe on some difficult work that he cannot trust his journeyman, to keep tally on the material, to work out his estimates, to enter his jobs, and to send out the bills, is all in the day's work. It is only human nature, in these circumstances, that not only are mistakes made, but that the office work is put off day by day. The result is that confusion soon develops, jobs are never entered, the correct figure forgotten, bills sent out at any old time and little attempt made to collect.

Of course, with the man who can afford a clerk the matter is easy. But with the other man it is difficult. How is he to overcome the trouble? The only way is by establishing a rigid system, and if he is so busy that he absolutely cannot find time to keep his books in order then he must sacrifice a job. Better do that than never get paid for it.

Institute a system, the simpler the better. Get the whole thing down to a nutshell. No matter how tired you may be at the end of the day's work, see that every job is entered up, and see that in estimating work, overhead expenses, and the full cost of material, etc., are included. Every job must bear its full proportion of charges before the profit is added. This important point is constantly being overlooked by plumbers. It is one of the most important points in the whole business. Clear up the day's work every night. The memory is treacherous, and besides, to depend upon it, is not business.

On the completion of a job, get the invoice out, if possible, the next day, and at the end of the month make a determined onslaught on the people who have not settled. The more rope a customer is allowed the less inclined he is to pay. He is probably too busy settling up with those who insist upon payment to attend to the plumber, who is evidently in no pressing want. Do not carry customers, until they break you. Claim what is justly due, and be determined to get it. A man who feels hurt at being requested to pay up is not worth doing work for. Let someone else have him. Give yourself a day off once a month, and get after the accounts yourself. The rest will do you good. Or, if that is not possible, put a few accounts in your pocket, and collect them when there is a job on in that direction. The plumber will say, "Why should I have to go to all this trouble? Why cannot people pay up without all this fuss?" Well, they won't, and there is the end to it. It is little use having a busy shop if the collecting side is ignored. The plumber must have his money, or he may as well close down. Therefore, every man should at once resolve, and see that he keeps to it, that no long credit is given, and that if it means taking a day off, when he can least afford to do so, that this day is taken. As we said before, better lose a job than do one and never get paid for it.

HOW YOU LOOK TO YOUR CUSTOMERS.

The managers of buildings recently had a convention in Detroit, and in discussing the question of repairs on office buildings, C. E. Horton is reported to have said:

"If your property has no leaky water, gas or sewer pipes, you may rejoice, but remember, nothing is everlasting, and it is only a question which one will last the longest, you or the building; meanwhile, watch your plumber and steamfitter, so that they do all their work properly, and allow you to inspect all their work under floors or inside of partitions before the work is covered up. The best of mechanics will become careless if they find that their boss does not take sufficient interest in their work. I have seen as many as twenty plumbers and pipe fitters repair jobs, which have cost the building from $25 up for each case on account of criminal carelessness in repairs. You send a plumber, for instance, to clean a pipe which is stopped up. He first tries to blow the obstruction out with his pump. Then he may try some lye or acid. He may also try a vise snake and if not successful he will come to you for permission to open up the floor or wall; if he now is certain that you are not likely to inspect his work he will cut a slit in your lead sewer pipe, or drill a hole in the iron pipe, then use his snakes until the pipe is clear. By this time it may be late in the afternoon, and instead of soldering up your lead pipe or putting a plug in your iron pipe, he will use ordinary electric tape, tape the pipes up, cover up the floor and that may be the last you hear of it for years, then the tape gets bad and another obstruction in the pipe below the cut allows the water and sewerage to flow out between the floors or inside of partition, which in time may ruin the ceiling for several floors below, particularly if the leak is near a column."

This is a bad reputation for any body of tradesmen to have among property owners, and we do not believe that it is general; but certainly it is the business of every plumber, steam and hot water fitter, so to do his work that this sort of criticism upon it will not be made.

NEW PLUMBING LAW FOR MASSACHUSETTS.

A law for State supervision of plumbing in towns has lately been passed in Massachusetts.

It had the unanimous approval of the Journeymen Plumbers' Union and the State Association of Inspectors of plumbing, but was opposed by the Master Plumbers' Association, though 157 master plumbers signed an indorsement of it.

The effect of the bill will be to abolish all local boards of plumbing examiners and to fix a standard set of plumbing rules for towns that have not accepted the so-called plumbing act.

The bill provides for the creation of a State board of plumbing examiners auxiliary to the State Board of Health. The latter board will determine the plumbing codes for towns not already provided with them. The examining board will consist of a journeyman plumber, a sanitary engineer and a third member, to be selected by the State Board of Health, the first to be appointed for a term of three years, the second for two years and the third for one year.

Some Anomalies in Modern Plumbing Regulations

Address by J. Pickering Putnam Before the Sanitary Section of the Boston Society of Civil Engineers—A Review of the Discussion Following Mr. Putnam's Talk Will be Published in Our Next Issue.

Good plumbing might be defined as a convenient arrangement of well-flushed fixtures securely trapped and drained.

To be convenient, it must be of such a kind that it can be installed at a reasonable cost wherever convenience dictates, and, once installed, easily understood, as in case of accident, by the owner. To secure this the utmost possible simplicity is a prime necessity.

Adequate flushing is absolutely necessary to maintain the plant in proper working order.

Secure trapping implies a water seal which can be permanently relied upon as a barrier against the entrance of sewer air under every possible adverse influence occurring in plumbing, such as siphonage, back pressure, evaporation and sediment accumulation.

Finally, security in the drain piping implies a method of joining which can be permanently relied upon to be air and water tight. This again implies sufficient flexibility of jointing to accommodate itself to the unavoidable shocks, settlements and shrinkages always encountered to a greater or less extent on building sites and materials.

The Boston plumbing law is deficient in every one of these particulars, although it is a great improvement on the requirements of previous years, back venting and main house trapping no longer being obligatory. Nevertheless, back venting is by the wording of the law recommended, and the use of the simpler and more reliable antisiphon trap system is only allowed on the approval of the commissioner. This is very bad, because it throws the onus of the decision upon an individual already sufficiently overburdened with work and responsibility of important matters which could easily and should evidently be decided once for all by proper scientific authorities or by impartial expert bodies commissioned to study the data, amply sufficient to-day to warrant such decision.

Protection of Water Seal.

It is possible for any one to-day having the proper apparatus to demonstrate easily whether or not a water seal is better protected by the back venting or by the antisiphon trap system; whether or not the main house trap does more good or more harm, and whether the lead-calked joint for cast-iron pipes, now specified, as the only one allowed, is really a reliable joint, or whether it is the most unreliable and unscientific form of construction in the whole domain of modern building; and, finally, whether or not a permanently reliable pipe joint can be made which will be sufficiently flexible to stand without injury the shocks and movements in streets and buildings due to settlements and shrinkage of materials and to the transportation and deposit of heavy bodies in their neighborhood.

All these questions are now subject to such complete and easy demonstration to-day that the uncertainty and mystery surrounding them in the mind of the public is quite inexplicable, except through a recognition of the fact that private interest finds its advantage in such ignorance. Pipe dealers are financially interested in maintaining the elaborate system of piping and trapping required by back venting and main house trap installation. Plumbers, on the other hand, have nothing to gain by it, but rather much to lose, since what money goes into unnecessary piping is lost for better fixtures and more of them, and the public, alarmed by all the complications, becomes distrusful of all plumbing and tries to do away with its benefits as far as possible. Leading plumbers are, therefore, strongly urging these simpler and better methods.

I shall endeavor to show the manner in which these demonstrations may be made without great cost by any one desiring to see our plumbing laws improved and his client's as well as his own interests safeguarded.

Apparatus for Making Tests.

Figs. 1 and 2 show a form of apparatus upon which a standard test may be made by any board of health or plumbing inspector to demonstrate absolutely the far greater efficiency of the simpler antisiphon trap system of water seal protection than of the complicated back vent pipe method.

You see two forms of the apparatus: the first, "hydraulic," requiring a water tank and water supply as well as a waste receptacle; the second, "pneumatic," requiring only an air exhaust pump. In both, 2-inch waste pipes are used with branch wastes to hold the traps to be tested, and quick opening gate valves and vacuum gages to measure the force of the siphoning action applied. An outlet opening just back of the trap is provided for connecting up a system of back air pipes shown in Fig. 3. These two forms of apparatus give exactly similar results, and both forms are useful in an inspector's office for checking one another. In the hydraulic apparatus the size of the tank is governed by the size of the water supply pipe and the amount of water pressure available. It should be sufficiently large to supply water enough for a standard number, say, ten, successive strains on the water seal of a trap without refilling.

The pneumatic apparatus permits of wider and more accurate comparative tests on the absolute and relative efficiency of different kinds of systems of trapping.

Fig. 4 gives a record of tests made by the hydraulic apparatus on different kinds of traps tested for resistence to siphoning action. The same strains are brought to bear upon each of the traps in succession, and you will observe by the horizontal lines the effect of each strain on the trap seals. Identical results are obtained on the pneumatic apparatus when the same degree of strain is applied as indicated by the vacuum gage.

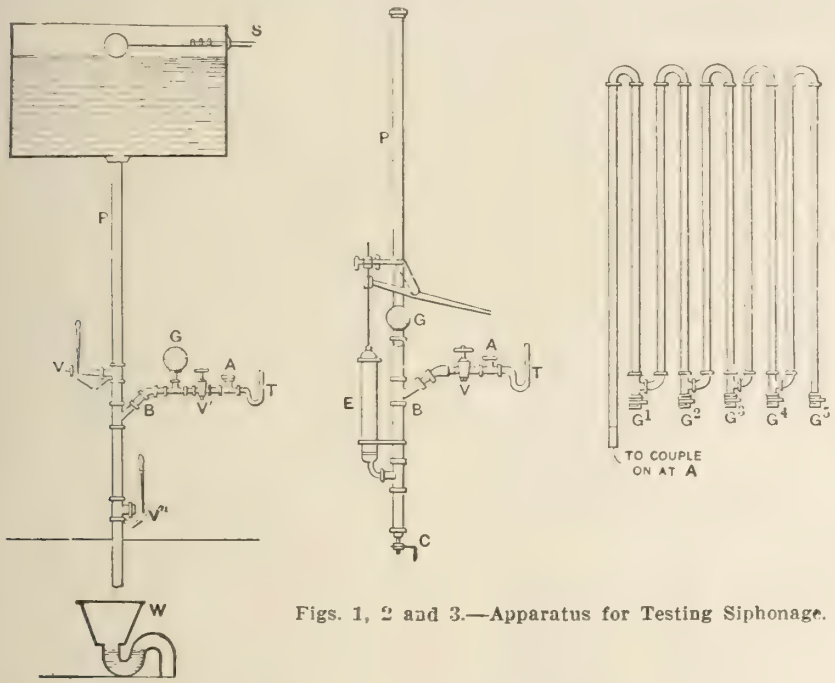
Now, we have made hundreds of tests at various times and places, in private and in public, with a great variety of testing apparatus, and very often on stacks of pipes and with traps installed for actual use in plumbing work, and invariably with the result that the unvented antisiphon trap always shows a resistance immeasurably superior to any vented siphon trap. Indeed, a properly constructed antisiphon trap is absolutely unsiphonable, while the vented S-trap, favored by the law, has little comparative strength of resistance and easily loses its seal even in ordinary plumbing practice and when the back vent pipe is new and clean. When the vent pipe is partially or completely closed by grease, sediment or frost, as very often happens, it loses what little power of resistance it may have originally possessed and becomes nothing more than a snare and a deception, providing only a false sense of security. The clogging of an antisiphon trap of proper construction simply reduces the

rapidity of waste outflow without reducing its resistance to siphonage.

Efficiency of Traps.

It will be observed on the drawings that the ordinary pot trap is capable of resisting siphonage if sufficiently large, and the greater its diameter the greater its power of resistance. I have used various forms of testing plants in these demonstrations. The same apparatus serves also to show the relative efficiency of antisiphon traps and back-vented traps in withstanding loss of seal by evaporation, and the tests show, as might be expected, that the air current produced by back venting destroys the water seal with a speed proportionate to its efficiency as a ventilator, and we see that this destruction of the seal by evaporation proves to be a danger far more important than any useful service it could possibly perform under the most favorable conditions. So often and so conclusively and satisfactorily has this been demonstrated that it has become accepted as a perfectly established fact among sanitarians about which there is no question whatever, and it only now remains for boards of health to make the same tests, to come to the same conclusion and revise the building laws accordingly.

Figs. 5 and 6 show the two systems of plumbing we have been considering—the first the complicated and the second the simple one. When we consider that in the latter the method adopted of pipe jointing is very much less expen-



Figs. 1, 2 and 3.—Apparatus for Testing Siphonage.

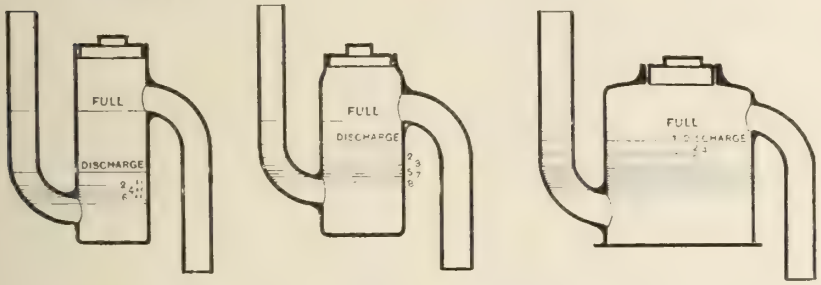
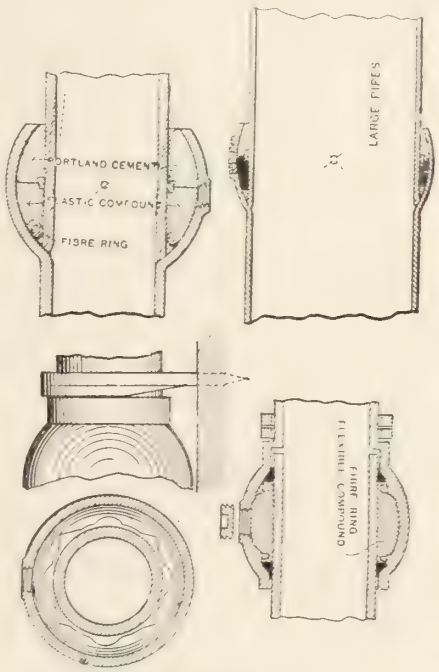


Fig. 4.—Record of Tests on Different Traps.



Figs 7 and 8.—Securitas Pipe Joint.

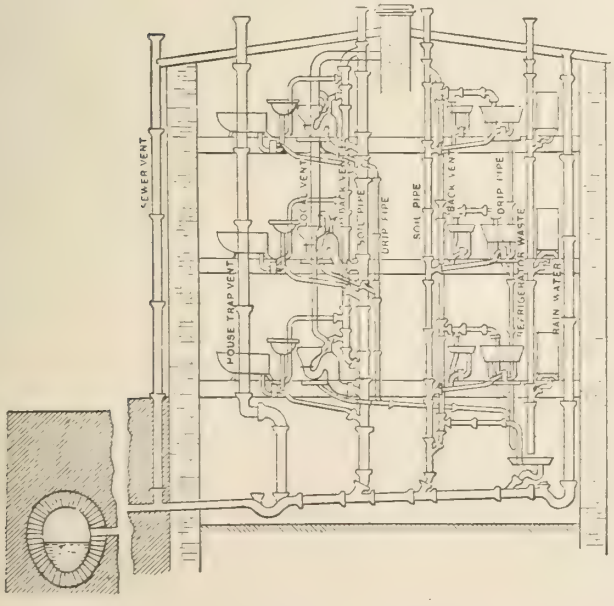


Fig. 5.—Complicated System of Plumbing.

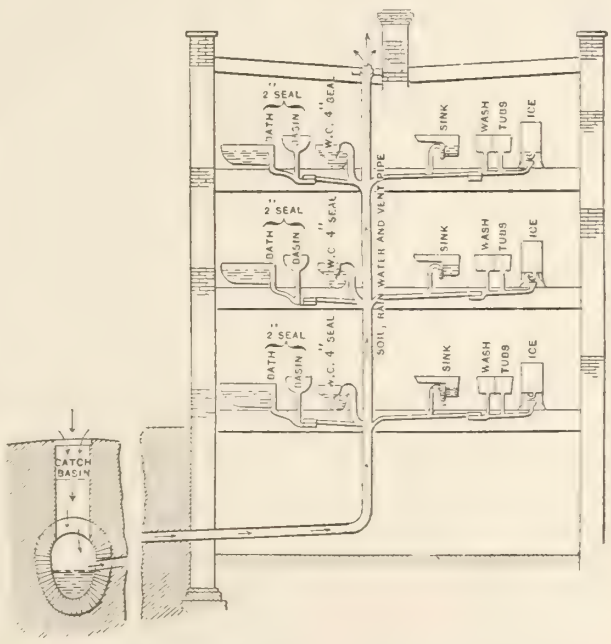


Fig. 6.—Simple System of Plumbing.

sive, while it is both reliable and flexible, we see that the cost of plumbing may easily be cut in two, the saving in repair work being much more than half the total expense, and in new work nearly half.

Figs. 7 and 8 give sections of the flexible joint I refer to which I have called the "Securitas" joint. It is composed of a permanently elastic compound unaffected by cold or heat up to nearly the boiling point of water, which permits of an amount of perpendicular play of one pipe in another equivalent to the maximum amount of contraction and expansion in the pipe system, and a simpler modification of

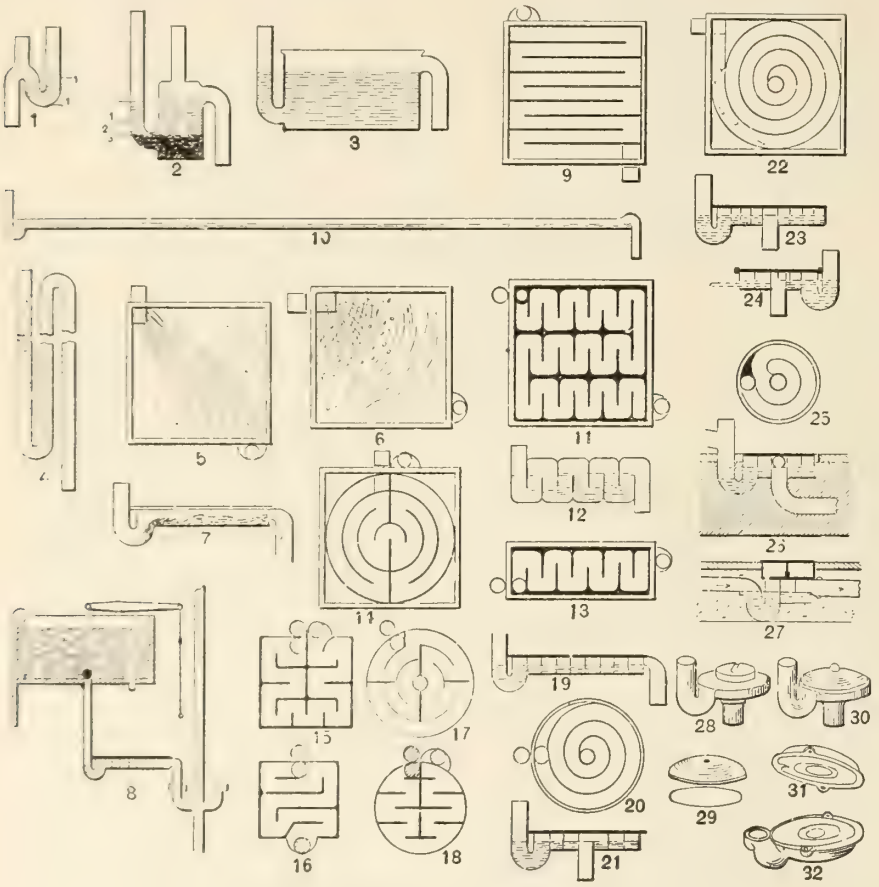


Fig. 9.—Unsiphonable Wide and Shallow Sealed Traps.

detail shown in the drawings admits, in the fittings, of a rotary motion to take up any shrinkage or settlement in the building. I have not time this evening to explain the construction of this joint in detail. It must suffice to say that after three years' testing under a water pressure of 45 lb. the joint has remained perfectly tight, even though the pipes forming it were moved by longitudinal and by rotary motion several times a year during the tests, and during this time also they were alternately subjected to freezing cold and almost boiling hot temperatures. The making up as shown in the picture can be done after the pipes are once in place in twenty seconds, while the hand calking of a lead bell and spigot joint requires as many minutes.

Siphonage of Unvented Trap.

I have said that the siphonage-resisting power of an ordinary unvented pot trap is far greater than that of any vented siphon trap, and that its power of resistance was in proportion to its diameter. It is also quite independent of its height or of the depth of its seal. Fig. 9 shows some very wide and shallow sealed traps which are absolutely unsiphonable. They consist of a very shallow return bend entering the bottom of a reservoir chamber of height substantially equal to the diameter of the waste pipe and so subdivided by partitions as to form a continuous waterway from inlet bend to outlet arm. This water way has a sectional area equal to that of the waste pipe, so that in normal use it shall scour itself when used with a properly constructed fixture having an outlet large enough to fill its waste pipe full bore. Even the smallest size of these traps is absolutely antisiphonic in plumbing. Hence it provides the desideratum long sought for in plumbing of a combination of the simple self-scouring form of the siphon or S-trap with the antisiphon quality of the largest pot or cesspool traps, and it has the peculiarity of retaining its antisiphon quality even when partially clogged with sediment, as under sinks or other fixtures improperly constructed as to flushing outlet. It can, therefore, never lose its seal, because when fully clogged the refusal of the waste water to escape announces its conditions and compels the removal of the obstruction. I have called this trap the "Securitas" trap.

There are, however, many other forms of antisiphon traps, including the ordinary large pot traps, which are practically antisiphon, and all are vastly superior to the expensive back-vent system. The public are, therefore, not dependent upon the use of any special or proprietary article for their protection.

Fig. 10 shows the apparatus used in my own experiments to discover whether dust and germs can escape from sewage on the damp sides of sewers and house drain pipes when once they have fallen therein. None of the particles could be forced clear through the tubing even by powerful blasts of the bellows. The wet sides arrested them as shown.

Experiences or Other Investigators.

My conclusions from my own experiments and those of eminent investigators like Carmichael, Miquel, Frankland, Naegeli, Carnelley and Haldane, Laws and Andrewes, Alessi, Pumpelli and Smyth, Major Horrocks, and, latest of all, Prof. C. E. A. Winslow, of Massachustts, may be summarized as follows :

(1) A sound water seal affords a reliable barrier against the entrance of sewer air and all kinds of germs.

(2) Dust and germs falling into water or against the wet surfaces of sewers and drain pipes, are, under normal conditions in the drains, arrested and prevented from rising again into the air so long as the surfaces remain wet.

(3) Abnormal conditions prevail in drains when splashing or bubbling occurs in the sewage, under the influence of which fine droplets may be projected into the surrounding air. If these droplets contain germs and are minute enough to be wafted in the air currents passing through the pipes, the germs therein may remain in the air until they again fall against the wet surfaces. Even germs have a definite weight, and the speed of their descent under the influence of gravity has been calculated, and these calculations give also the speed of an air current necessary to support or move them.

(4) It is possible that small particles of sewage which have dried against the upper parts of the walls of the sewers may be detached therefrom by air currents and in this manner allow of the escape of germs into the sewer air. The probability of this action is denied by

some investigators but affirmed by others. It may be admitted as a possibility.

(5) Disease germs seem to be unable to survive long in sewage, the non-pathogenic germs therein far outnumbering them and destroying them by their products.

(6) Fewer germs are found in the air of sewers than in the outer air above the sewers, and those which are found in the sewer air are dissimilar in kind from those in the sewage, but similar to those in the outer air.

(7) The number of germs present in the air of well-ventilated sewers exceeds that in less well-ventilated sewers and varies with variations in the content of the street air, implying that their origin is from without and not from within the sewer.

(8) The majority of investigators have failed to isolate specific disease germs from the air of sewers, and it may be stated in general terms that they are not to be found there under normal conditions. Yet a few well-known investigators have obtained cultures in the air of sewers of germs apparently coming from the sewage under conditions apparently normal, and it is generally admitted that the splashing, bubbling or drying of the sewage may release them under rare conditions in good practice. Their numbers in sewer air must, however, in properly constructed sewers, be so small in the whole volume of the sewer air that their effect regarded from a sanitary standpoint may be considered as negligible.

(9) It is known that disease germs, especially those of consumption, may be disseminated in the air above the sewers, and may, especially in times of epidemic, abound therein in large numbers and unquestionably in larger numbers than in the air of the sewers themselves.

(10) Under such circumstances street air passing through the sewers and house drains becomes filtered by them and emerges from the pipes freer from its dust and germs than when it entered, and must, in fact, before reaching the tops of the stacks above the roof be entirely freed therefrom.

(11) Currents of air rising through the soil pipes in buildings act like smoke in chimney stacks, taking a spiral course as it ascends. In so doing, as well as in passing around bends and angles, every particle of air tends to strike against the inner surfaces of the pipes more or less often before reaching the roof. The result of this phenomenon is that any dust and germs which might enter the house drainage system from the public sewer are bound to be arrested somewhere along the wet surfaces of these pipes and be ultimately destroyed. Hence, with good plumbing, the possibility of the entrance of a disease germ into the house from plumbing pipes becomes practically nil. If there is any danger whatever of contracting disease from the air in the sewer itself so ventilated, all such danger is thus eliminated for residents in the houses connected therewith. More questionable germs are consumed every twenty-four hours in ordinary food and drink, or inhaled from the outer air, than would probably be obtained from the soil pipe air in a lifetime.

(12) The omission of the main house trap converts every house drain into a sewer vent and insures the destruction of any dust and germs, pathogenic or otherwise, which may under normal or abnormal conditions be found in the sewer. The rate of purification of the air of cities by this method of filtering it through the sewers and house drains is very great, amounting, by my calculations, to over a million and a half cubic feet per minute for every square mile of the city's area, or to the ventilation produced by a ventilating chimney 68 ft. in diameter conducting air at a speed of 419 ft. a minute.

(13) The use of the main house trap obstructs sewer ventilation and results in forcing any pathogenic germs and foul and dangerous odors it may contain into the street through the sewer gratings.

(14) The use of the "back-air" pipe with traps tends to destroy their water seal by evaporation, where unvented antisiphon traps are capable of retaining their seals under all conditions encountered in plumbing practice, and for many months without refilling.

(15) Drain piping may now be installed in such a manner as to be permanently sound and reliable.

(16) Splashing in sewers may be avoided by a proper construction of the pipe connections with the sewer.

(17) Whatever danger, if any, there may be from the possible presence in rare and isolated cases of disease germs in the air of the sewer itself, that danger may be practically eliminated by ventilating the sewer through the house drains and using sound plumbing and unvented antisiphon traps. Under such conditions there is indeed a possible danger of contracting disease from dust and germs coming in through open windows, but none from the plumbing system, because the former may and the latter cannot transmit the germs.

(18) The shallower the seal of an antisiphon trap the better. It not only requires less water to refill it from its reservoir or "refill" chamber after siphonage, but it will then protect the seal of any adjoining water-closet trap as well as itself.

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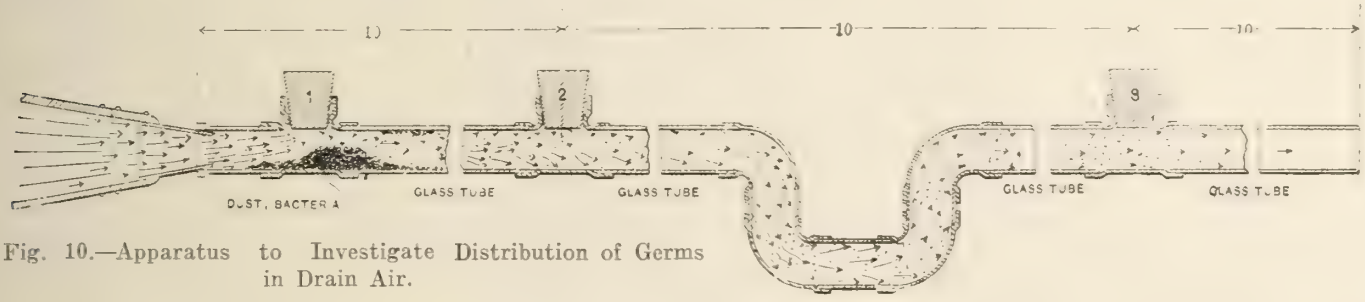


Fig. 10.—Apparatus to Investigate Distribution of Germs in Drain Air.

WINNIPEG PLUMBERS' PICKETTING CASE.

A brief cable dispatch from London was received in Canada a few days ago stating that the Privy Council had refused to hear the appeal in the case of Cotter v. the Plumbers' Union of Winnipeg. This kills the last hopes of the union in upsetting the decision given by the Court of King's Bench of Manitoba, by which a fatal blow was struck at the power of trades unionism in granting a perpetual injunction against picketing in the case of strikes, and also awarded damages to the Winnipeg master plumbers for the losses sustained through their premises being picketed during the plumbers' strike in that city three years ago.

J. G. O'Donoghue, Toronto, who expected to plead for the union before the Privy Council in case permission to appeal was granted, when seen by Plumber and Steamfitter said he had heard no further details than were contained in the cable. If the master plumbers pressed for the award they would have to sue the individual members of the union, as the union itself was not an incorporated body, and, therefore, not a legal entity. His own opinion was that the Winnipeg master plumbers would be content with their moral victory.

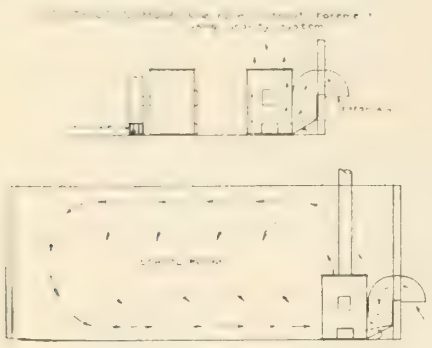
Ventilation in Heating Systems in Schools

Valuable Pointers Given in an Address by L. L. Hamilton on the Problem of Installing Heating and Ventilating Systems in Schools and Other Buildings.

It is strange indeed that the world generally has been so slow to appreciate the value of fresh air. Surrounded on every side by an inexhaustible reservoir of the one thing necessary to produce the greatest possible mental and bodily vigor, men deliberately shut themselves up in air-tight houses, avoiding with infinite pains every possible opportunity for the introduction of pure, fresh air or the elimination of foul air, until tortured by pain and wasted by disease they turn in despair to ill smelling nostrums or sugar coated pills for the health and strength which might have been theirs for breathings.

Diseases of Foul Air.

Scientists are beginning to recognize the fact that the diseases directly attributable to foul air are a greater menace to this and to all succeeding generations than the yellow peril or the impoverishment of our national resources. A recent editorial in the "Outlook,"



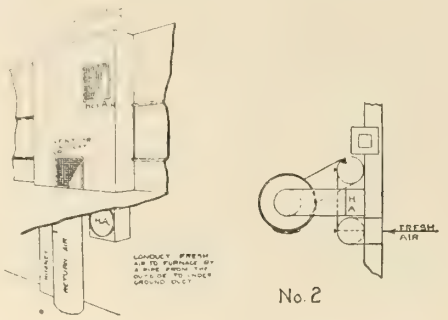
after commenting on the fact that of those who die between the ages of twenty and thirty, one-fourth die of consumption and one-fifth of pneumonia, goes on to say:

"A military campaign in which fifteen regiments were completely annihilated would be accounted a stain on modern civilization, yet last year fifteen regiments of men, women and children, were wiped out in New York state alone by the 'white scourge.'"

If a report was to be circulated that a community of people were starving their school children—only allowing them a small proportion of the food they should have—this country would rise up in arms at the outrage—yet every day in this and nearly every other community we are denying these children the very breath of life. Starvation may take away its thousands, yet while it is doing this foul air will take away its ten, yes, even the hundreds of thousands and leave the mained. with health impaired, to hand this down to future generations; the people do not understand and 'tis well that we may pray "forgive them for they know not what they do."

Sanitary Inspectors Needed.

The subject of ventilation is now having the attention of many able engineers, architects, educators, as well as the public at large and many states now have, or are working on, laws for the



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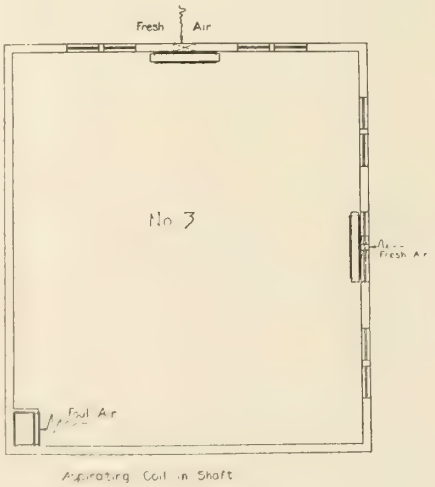
betterment of the sanitary conditions of school houses. This, of course, is commendable, but it should not stop at this one phase of the situation, and we should look forward to that time when it is considered a crime to house a gathering of people into a closed building without adequate means of ventilation and I would go still a step further and say a special sanitary inspector should be required in every city, village and hamlet to see that we have proper ventilation in every home and office throughout the land.

To define ventilation—it is the process of removing foul air from a space and replacing it with pure, fresh air. Pure air contains approximately four parts of carbon dioxide to ten thousand parts of air, and six or seven parts of carbon dioxide is considered still of acceptable purity, but anything in excess

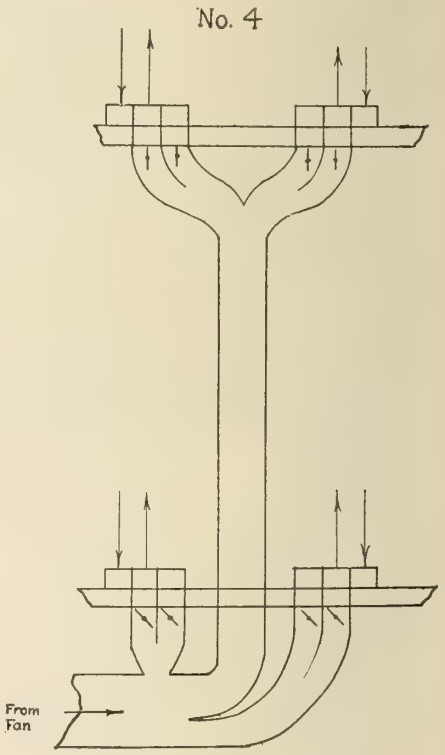


of this proportion should be considered as foul air; yet from test it has been ascertained that a great many public rooms contain from 80 to 100 of carbon dioxide to ten thousand parts of air. Can it be wondered at that the school children have headaches and adults feel drowsy at church, the opera and the public places; this can and will be remedied.

Ventilation is not only necessary from a hygienic point of view—but it should be considered from an economic point of view also, for it has been shown by test that invigorating effect of pure air increases the efficiency of the office and factory 10 to 15 per cent., think of the millions lost, vitality wasted.

Methods of Ventilation.

It can be readily understood that it is impractical to remove all the foul air at one time and replace it with pure air, so the process of dilution is resorted to—that is enough fresh air is supplied to keep down the percentage of carbon dioxide within the prescribed bounds; this brings up the methods of accomp-



lishing this result. Ventilation and heating have to be considered in conjunction for it is necessary to raise the temperature of zero weather, for instance, before discharging it into the building and it will be my purpose to discuss the methods regularly employed by our company in this field with particular reference to school work, leaving out the technicalities but discussing the subject in its general terms.

The general accepted standard of ventilating engineers is supplying thirty cubic feet of pure air per head per minute and most calculations for mechanical equipments of schools are based on this figure, but with the gravity system with varying conditions it is evident that we can only approach this as near as means and expediency will permit.

The heating and ventilating of school

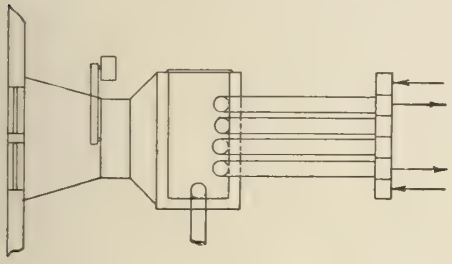
buildings can be divided into seven general heads.

1. The district school—one room, without basement, using gravity system.

2. Schools—one, two, three and four rooms with basement, using gravity system.

3. Schools—using steam or hot water radiation with indirect or direct-indirect ventilation.

4. Schools — using direct radiation, with trunk line system of fan ventilation.



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5. Schools—using furnace heat, with fan system of distribution.

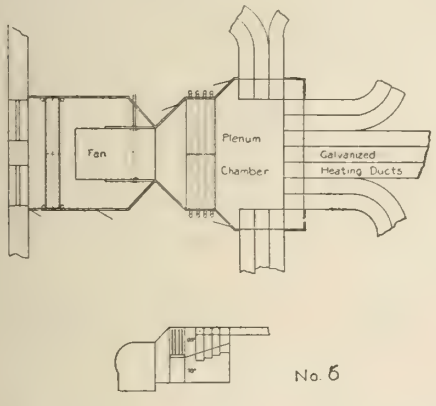
6. Schools—using steam, with plenum or double duct fan system.

7. Schools—using furnace, with plenum or double duct fan system.

Each of the above systems is adaptable to humidifiers, heat control, and the mechanical systems with air washing devices, each commendable in its respective function and most desirable in connection therewith.

System for District School.

Figure 1. For the district school we use a special room furnace located directly in the school room, which draws its supply of fresh air through a fresh air duct and discharges it at the top of casing through the annular space between the furnace and casing; causing



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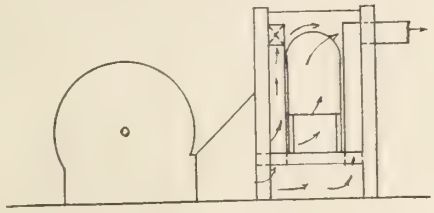
the warm air to circulate within the school room and we have found that the temperature in the extreme corner of the room will not vary two degrees from the space within six or seven feet of the heater itself.

The foul air is removed from the floor line by an opening either at the base of the smoke flue or a special arrangement of the smoke pipe and the ascending smoke products acts as the motive force. This system, while not as elaborate or as scientific as the mechanical systems, when properly installed and used, greatly improves the conditions in district schools.

Another thing with the system installed, the school room can be heated much quicker than with stoves and also cheaper and can be explained as follows: The circulation caused by the jacketed furnace distributes the heat more readily and in addition to this produces an uniform heat throughout the room, while with the heat from a stove the tendency is to overheat one portion of the room and neglect the other and at all times the temperature of the upper portion of the room is very much overheated if they attempt to keep the floor at all comfortable.

System for Small Schools.

Figure 2. With small schools with basements, the simplest and best system is the furnace when properly installed—that is, due attention should be given to the size of the ducts and to see that the openings are located in a scientific and sanitary manner. Figure 2 shows a model arrangement in this particular and it will be noticed that the unsani-



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tary floor registers have been dispensed with, and means provided for the introduction of fresh air as well as recirculating the air within the building when not occupied—thereby saving fuel. This same arrangement can be modified, for two rooms, and the four room propositions, would ordinarily be handled with two furnaces.

Direct Radiation System.

Figure 3. Represents a school room with direct radiation — these radiators are supplied with what is known as a "box base" having an outside connection with fresh air, and are known to the trade as direct-indirects, this base is arranged with shutters so that the outside air may be drawn up through the radiators or the air can be recirculated within the room. This system is susceptible of good work but at the present time the "box bases" as manufactured are entirely too small and the free area through the radiation inadequate to get good results.

With the straight indirect system the indirect-radiation is placed in a galvanized iron duct and the outside air is forced to pass over them before entering the room. The foul air is discharged into a duct with the opening at the floor level, and this is usually provided with an aspirating coil placed either immediately over this opening or in the attic. The former method, however, is preferable.

The foregoing methods are all gravity propositions, still they are commendable and should be encouraged.

The Best Ventilation.

Figure. 4. Schools having direct-radiation, with a trunk line fan system of ventilation representing a typical installation of the better class of school building in the Northwest, the action is positive in its results and perfect ventilation is secured regardless of atmospheric conditions.

Figure 5. Furnace heat with fan system of distribution, this represents the most maligned system installed in school building from the fact that it is too often put in by incompetent workmen, and the poorely contructed furnaces used have helped to give the system a bad name—yet the principles of this form of heating are correct when installed in a scientific manner and we can predict a great future for it in small buildings, say four to eight rooms; in addition to the other good features it especially adapts itself to the poor janitor service and to the pocket books of a community that cannot afford the higher priced steam systems.

Highest Type of Heaters

Figures 6 and 7 represent the highest type of heaters for school work, the double duct or plenum systems. With these systems not only a positive degree of heat is maintained, but a constant volume of air is supplied at all times. The mixing dampers are usually controlled by heat regulators, allowing the proper proportion of tempered and reheated air to enter the room to maintain the temperature desired; the valves, of course, being actuated from a thermostat placed in each room. With the fan systems there is always a slight pressure within the building and any leaks around the doors and windows are outward preventing draughts, cold floors, and variable temperatures. In extra large installations sometimes we use the combined plenum and exhaust systems, in which case the exhaust fan is always of a smaller capacity than the supply fan.

LIGHTNING AND TIN ROOFS.

A correspondent writing recently in a daily paper, said:

"During sixteen years' experience in the tinkering business I have known no instance of lightning striking a tin roof, and I have yet to meet the man who has heard of it. It may be that during an electrical storm the electricity is conducted by the tin to the leader, down the leader to the ground, and then disappears."

Scientists have come to the conclusion that the best protection from lightning is a web or net of wire work enclosing the building. As this is hardly practicable, it is interesting to know that a tin roof covering the exposed upper surface of the house, connected at numerous points with the ground by downspouts, comes very close to the form of protection recommended by modern science. This may account for the well-known immunity of tin-roofed structures from lightning.

Heating the Modern Kitchen with a Gas Range

George W. Thompson, in an Address Before the Commercial Gas Association, Details the Problems Met With by Those Who Instal Appliances for the Use of Gas for Heating and Cooking.

There is no heat to be connected with the [illegible] conditions of domestic life which is of more importance to home dwellers than the ways and means to maintain comfort and good cheer. Money is spent with a free hand for decorations, art, bric-a-brac and hundreds of other dainty furnishings for the home, yet one of the most essential of all features is the kitchen and its equipment, which often is equipped with the coal range and other old-style furnishings, making the atmosphere of such a kitchen detract from the cheerful and cozy living-room. The health and comfort of the persons using the kitchen demand that it should be furnished with the most improved sanitary equipment.

For cooking purposes, wherever the gas main is laid, the gas range has almost entirely supplanted the coal and wood stoves for the summer months. Even where coal and wood are used in winter time, in summer the gas range will be found installed for the cleanliness, comfort and coolness which it insures, there being no cooking operation which cannot be satisfactorily performed with gas. Indeed, there is no other stove on which all cooking operations can be carried on at once. It is impossible to roast, broil, stew and toast on a coal or wood stove simultaneously. Further, it is not necessary to stoop and bend to get at the oven of a modern gas range, and this, combined with warming ovens and cake griddles, are features of great convenience to the home wife.

Builders of new homes, if followed up with the proper suggestions, self confidence and enthusiasm, will in most cases install the house-heating furnace with additional outlet to heat the kitchen. The kitchen heated and a cabinet gas range installed, the question now arises how to most economically heat the water for household purposes. The answer is by the automatic type of instantaneous water heater, and those who appreciate the value of pure and freshly heated hot water at even temperature throughout the entire house, the matter of first investment is secondary. The hot water can also be supplied by installing a pipe coil or water back to the furnace, thus providing, through circulation to the boiler, ample hot water. The above outfits will effect a saving in first cost, fuel and repairs over the cost of the old method, aside from the important advantage of healthfulness, comfort, convenience, cleanliness, etc.

As builders of new homes will concede to this equipment, it is therefore to owners of old houses who may not be familiar with the benefits of modern methods that we should devote our efforts.

This paper is written that we may bring these owners to a better understanding of the subject.

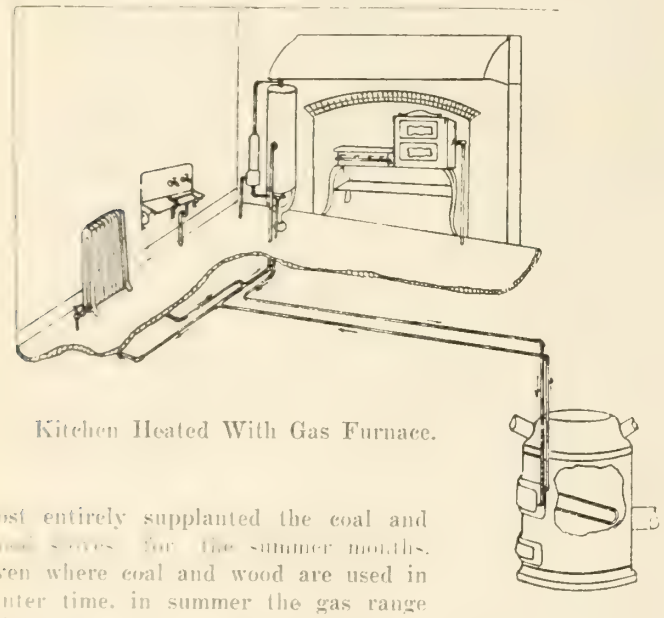
The trouble which we have found heretofore in getting customers to use gas in the kitchen for 12 months in a year, has been to supply hot water at an expense which did not seem excessive to the customer. We have found that during the summer months the customer was willing to use an independent gas water heater, but during the winter months, when the demand for hot water and heat are more, and the initial temperature of the water very much lower, the tendency seemed to be to revert again to the coal range for an adequate supply of hot water and heat. This heat and hot water should be secured from connections made to the house-heating furnace. The work of installing is very simple and the cost is much less than is commonly thought; in fact, there are many different way whereby this result can be accomplished.

There is no need of tearing out nor in any way altering the general features of the kitchen or furnace in any of these connections, and as there are many different methods used, I will try to describe one or two of the most successful.

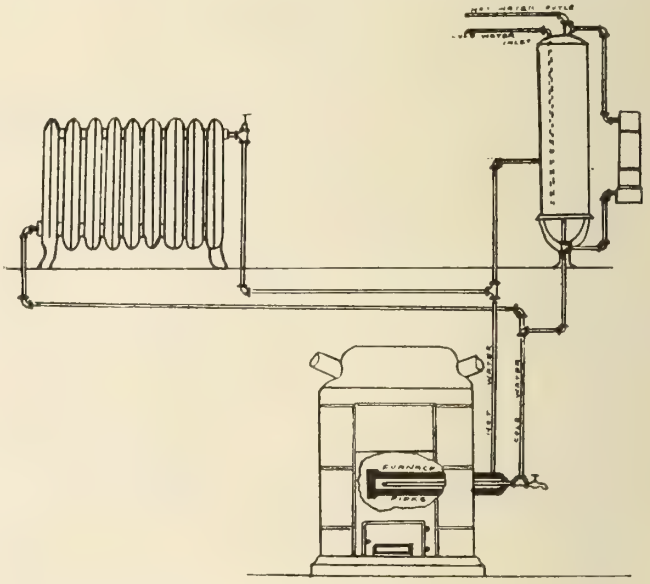
We will take it for granted that the kitchen is equipped with a modern cabinet gas range, automatic or circulating water heater for use when not using furnace, gas range and water heater, oak griddle, gas irons and proper gas lights, with all useful kitchen utensils in convenient places. The kitchen not more than 12 x 12, or 14 x 14; the table at the side of the range and near the sink; the sink, range and table all in reaching distance so that one may stand comparatively still and cook an entire meal.

Our plan is to take our cold water from the bottom of the kitchen boiler, run the line to furnace in cellar, enter furnace through door frame and extend pipe about 1 square foot for each 32 feet of radiation, through fire box, returning through door frame and on to kitchen, where we connect onto a home-made pipe coil radiator, then to side of boiler.

In some kitchens we were unable to find suitable space for the pipe-coil radiator; this led us to the wall radiators, which we found were much more efficient than the coils. Pipe-coil radiators, as generally assembled, vary in efficiency as all surfaces are radiating from different temperatures under varied condi-



Kitchen Heated With Gas Furnace.



Water Heater in House Furnace.

tions. At the intake end the top is the hottest; therefore the surfaces at the outtake end must be less efficient as incidental to its circulation from point to point. The wall radiator is so constructed that when installed, either in horizontal or vertical form, it provides for evenly heated surfaces, quick returns, positive results and greatest economy of space. It is more compact than pipe coils, as 4 square feet of positive heating surface can be installed upon 1 square foot of wall surface; this is not possible with pipe coils. It can be assembled in units to provide for distribution of heat at special locations in a manner more effective than coils. It is equally desirable when installed upon side walls between windows, or hung from ceiling. Its durability as against wrought-iron or steel pipes is about as five to one. It is more rigid, withstands presure better, avoids water hammer and telephoning of noise. In some cases the wall radiators have been connected so as to be used as plate or food warmers.

Another system of entering furnaces, and, in fact, the one that we have found to be the most successful, is by entering door frame with cold water, drop down close to front wall of furnace, to within about 7 in. of grate, then across to opposite wall, rise and go out door frame, then to the wall radiator. This system will make hot water with a small fire, which most people carry in mild weather, as well as in cold weather with full fire, as about the same amount of pipe is exposed in both cases to the hottest part of fire.

Another system enters cold water at top, and in centre of furnace drum, attached to which is a small disc or waterback, which is suspended over centre of fire, returning back through top, and here both inlet and outlet are connected to their respective lines with ells and swing joints, which make it possible to raise or lower the disc according to the fire in the furnace.

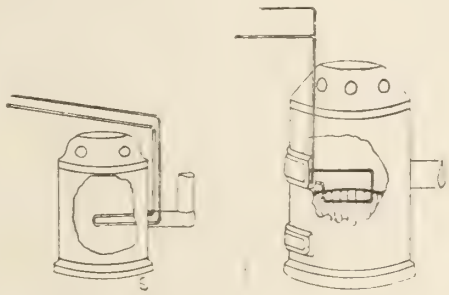
When the present steam plant is not overloaded an additional steam radiator is placed in kitchen and the hot water for winter use is obtained by means of a steam condenser attached to side of hot-water boiler, steam being supplied from kitchen radiator.

The chief objection we have had to furnace connections is that of no hot water or heat in fall or spring. Investigation showed that only a minimum of fire was being maintained. On account of the great convenience and saving in cold weather, most customers are willing to use the independent gas water heater, a little later in season, and if necessary, light oven burners of gas range for temporary heat. In some cases valves are installed whereby the radiator can be shut off and tll the energy devoted to heating the water. This applies only in mild weather. Where the present heating plant will take care of a little additional radiation, good results can be obtained by getting some local heating engineer to add on the extra radiator, and make furnace connections for hot water only, or use the automatic type of gas water heater. This system appears to be the most practical as well as satisfactory.

When pipe is used in fore pot of the furnace for heating water and radiation, there is practically no difference in transmitting power of iron, brass or copper.

All piping exposed under kitchens that have no cellars should be covered with asbestos, molded covering, mineral wool or some suitable non-conductor of heat. Radiators and pipes in kitchen should be bronzed, so as to be more pleasing to the eye.

We charge $22.50 for furnace connection and 27 square feet radiating surface, and 30 cents for each additional



Single Coil Heaters in Furnace.

square foot of surface. The prices just let us out. The difficulty we have encountered is that every job is a separate problem, because no two families run their fires alike.

Rules for Radiation.

Having first ascertained the dimensions of the room, find the number of square feet of glass surface in the windows and outside doors, figuring these doors as if of glass, and measuring the entire opening of windows and door frames. Ascertain the square feet of exposed wall surface, from which deduct the glass surface as obtained above, and this will be the net amount of wall exposure. Then reduce the wall surface to the equivalent of glass surface by dividing the net amount of wall exposure by 10 if the wall is from 8 to 10 inches thick, by 15 if from 12 to 26 inches thick, and by 20 if the wall is 26 to 38 inches. This result, added to the glass exposure, gives the glass equivalent of the glass and wall exposure. Multiply this glass equivalent by 75 (the cubic feet of air that each square foot of glass will cool per hour), and the product is the cubic feet of air to be heated to overcome the cooling effect of the glass and wall exposure. Now add to this the cubic contents of the room, and we have the total quantity of air to be heated.

It is customary to guarantee a temperature of 70 degrees in zero weather. To arrive at the amount of radiation under this guarantee, multiply the quantity of air to be heated by the decimals given below, and the product will give the number of feet required.

In localities where the temperature falls below zero, add the amount of radiation obtained 1 per cent. for every degree below zero.

For Hot Water.

For temperature of water in radiators, 1600×0.0092.

For temperature of water in radiators, 1700×0.0081.

For temperature of water in radiators, 1800×0.0072.

For water we recommend using the multiple 0.0092; for if water is 175 feet in flow and 145 in return, the average is 160 feet in radiation.

The foregoing rule is based upon using direct radiation, and the apportionment provides for one change of air in the room per hour.

For more frequent changes increase the cubic contents by as many times as it is desired to change the air per hour, but the multipliers remain the same.

Example.

Room, 16 feet wide, 20 feet long, 10 feet high; four windows, 3 feet wide, 5 feet high; two sides of room exposed to zero weather; 10 inches thickness of wall; 16×20×10=3,200 cubic feet of air in room; 3×5×4=60 square feet of glass in windows; (16+20)×=360 square feet of wall surface exposed, including glass; 360—60 (glass), 300 square feet actual amount of exposed wall surface; 300÷10=30=glass equivalent in wall exposure; (30+60)×75=6,750=air in cubic feet cooled by windows and walls; 3,200+6,750=9,950, the total in cubic feet of air to be heated; 9,950×0.0081 (multiplier for hot water)=80.5950 radiation in square feet required to heat room.

WOMAN TO HEAT TURK'S PALACE.

An American woman has been selected to perfect the plans for the installation of a modern heating system in the palace of the Sultan of Turkey. Miss Anna Barber, formerly of Colorado Springs, Colo., who for the last several years has been connected with a large London firm engaged in the manufacture of heating apparatus, is the woman, word of her appointment having just been received by her brother in Colorado Springs. As an architect Mis Barber years ago determined to become a specialist in the heating of large buildings.

The Pollution of Water Supply by Sewage

A Plumbers' Fishing Excursion Provokes a Sanitary Problem — Contamination of Streams Should be Stopped — One City's Sewage the Source of Another's Water Supply—What Should be Done With the Sewage.

Written for The Plumber and Steamfitter by Charles H. Denison.

One day last summer when the sun was getting in its best licks, and as the wavy lines of heat were dancing upward from the pavements, and the collar hung limp as a wet rag on one's neck, and the flies buzzed persistently around the office, I gave up in despair and flinging my pen violently upon the desk I said to my friend Brown "Oh, shucks, what's the use, let's go fishing. I have stood for this drag as long as I can and it's me for the bubbling brooks tomorrow." Brown agreed, and on the morrow we lit out early for a river where a couple of years before we had made an excellent catch. Why shouldn't a plumber catch fish, if he can?

I do not know whether or not any one is going to believe this yarn for I must admit that it is a rather heavy strain on the imagination, a fish story told by a plumber, but I am here to remark that all that livelong day we never caught a fish. No, sir! We fished up stream, down stream and both ways in the middle and never as much as one little solitary "strike" to cheer our hearts. "That's mighty curious," said Brown, with a wise look at the heavens. "Here we are with all kinds of bait, and there couldn't be a better day. I'll bet that the fish have all vamoosed." So we decided to look around a bit and make a few inquiries and, if possible, find out what in the dickens was the matter. In so doing we ran into a plumbing problem—one of the very things which we had dug out of the city to avoid.

It seems that some factories and mills had been established several miles up stream, and also that a couple of sprouting cities had acquired (improved?) sewer systems, the same emptying directly into the river.

Imperfect Sewerage Systems.

As time passes and the country fills up the thing pans out about like this: A bunch of settlers come to a desirable location and settle. May be this is in a timber country, or perhaps the spot happens to be near a river in the prairie country. If in the wooded section, the timber is soon chopped down which results in the diminished amount of water in the rivers. As the settlers become more wealthy improvements are introduced and finally a sewerage system is placed in the town, which, in the majority of cases, discharges directly into the river of diminished flow.

The matter does not rest here for factories of numerous kinds come to the city and the various wastes from these industries also discharge into the already contaminated waters of the aforementioned river. The refuse covers the spawning beds of the fish and so the eggs are unable to hatch. The result can be easily foreseen. No fish, in short order. Not only that, but in many places where the set of the current is in the proper direction and the shores are low, quantities of waste are found upon the banks with results which can be better imagined than described.

Up to this point the most serious results had been the assassination of the fish and the spoliation of the river water. But now we come to the main point, which is that many cities get their water supply from rivers. Now where proper means are taken to filter the water before it is pumped into the mains, the dangers are practically eliminated, if we can believe what has been said. But in many waterworks systems the water is not properly filtered, being pumped through cribs filled with stone or coarse gravel.

Water Supply Contaminated.

I know of a small city where the supply pipe ran directly into the river and its mouth was protected by a mound of stone. Now several years ago an epidemic of diphtheria any typhoid fever broke out in that city and raged for the better part of the winter. Higher up the stream was another city where these diseases had been quite prevalent. I cannot remember that anyone ever traced the connection of the epidemic between the two cities located within ten miles of each other, but in the light of what I have since read, seen and heard I should lay the trouble in this case directly to the pollution of the river water and the fact that it was used in the schools for drinking purposes, as I do remember that the majority of people striken were children of the school age.

Several years ago the writer was down in the State of Massachusetts and went out one evening for a ride upon the little river which was near the place where he was stopping, I noticed that the waters were nearly the color of ink and they certainly "smelled to heaven." Inquiring the reason, I found that several factories a few miles above were the parties who defiled the waters. I believe, however, that to-day Massachusetts has an anti-pollution river law which is enforced.

With the rapid growth of the country it will be seen that some other means must be taken to get rid of the sewage and waste. Some people may argue that the commercial advantages derived from the location of large manufactories overbalanced the damage done in polluting the rivers. It is a clumsy, irrational and dangerous course to allow the sewage and waste matter to go sliding down stream, thus thrusting the matters which one town or city should take charge of upon the shoulders of the people farther down stream. This brings us up to one of the most pressing questions now before the public and that is, "What shall be done with the sewage and waste products?"

COSTLY OMISSION OF WORD.

The omission of the name of the city where the company's headquarters are located from the label on a furnace made by the Toronto Furnace and Crematory Co., cost that concern the loss of a suit in the Division Court at Toronto last week.

It appears that in November, 1907, the Toronto Furnace and Crematory Co. sold a combination heating system to Thomas M. Ewing for a house he was building. The house was mortagaged to the Northern Life Assurance Co., and was later sold to David Pearcy. The Toronto Furnace and Crematory Co. were paid $100 by the Northern Life Assurance Co., but claimed a balance of $165, and entered action under a manufacturers' lien against Mr. and Mrs. Ewing, David Pearcy, and the Assurance Co. to recover it, or secure an order enabling them to remove the furnace.

The law regarding manufacturers' liens requires that the manufacturer shall have his name and address on the article. Judge Denton, at the trial, held that though the name of the company embraced the word "Toronto," this was not sufficient to comply with the law's requirements. The label read as follows: "From the Toronto Furnace & Crematory Co., Limited, 70-72 King street east." Judge Denton remarked that this address might be found in other places than Toronto, and dismissed the action. His decision is sustained by the Division Court.

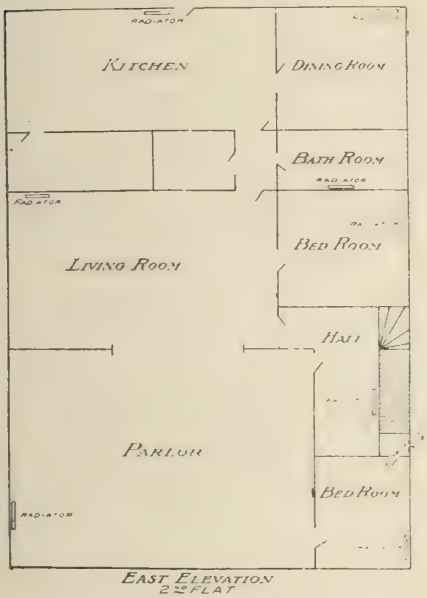
Although the company's chances of appeal are cut off they may sue for the amount of the account under a debtor's liability, though the points have not been decided as yet. The company has since added the words "Toronto, Ont." to its labels.

Questions and Answers in Heating and Plumbing

Inquiries Solicited From Readers, Who Run Across Problems Which are Unusual—Just as You are Interested in Reading the Questions Asked by Another Man in Your Trade, so Will the Other Fellow be interested in Your Problems — Send the Queries Along and We'll Answer Them—or try to.

A PROBLEM IN DRAFTS.

Editor Plumber and Steamfitter.—I notice in your issue of February 1, a question on a "problem in drafts," relative to the hot water heating of a



Plan of Flat Heated with Hot Water.

second flat which does not give satisfactory results.

Now as the cut shows the second flat (and I understand by that it to be over the first flat) it should heat easier than the first flat, all other things being equal. I observe a radiator by the side of the stairs and notice the door leading to the vestibule. Every time this door is opened (unless the vestibule is heated) there will be a quantity of colder air admitted, which will give a rather chilly feeling to the rooms, in case the radiation is somewhat scant.

As the landlord seems to think the cold air comes from the hall, I would suggest increasing the size of the hall radiator. In case it is a 38 in. you can get several more feet of radiation by simply putting in a higher radiator. Use one 45 in. in height and heat the air in the hall so that when the air from same rushes into the rooms of the flat, it will warm them and not cool them, as is now probably the case.

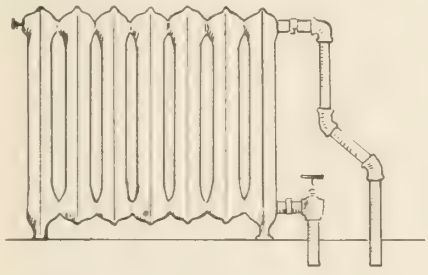
In regard to getting more heat from the same amount of radiation now in the flat I would suggest that a pressure appliance be placed on the job which will give a more rapid circulation of water in the system. I believe that if these two points are carried out that the landlord will derive sufficient heat from the apparatus and be perfectly satisfied.

J. C. D.

FAVORS OTTAWA'S METHOD OF CONNECTIONS.

Editor Plumber and Steamfitter,—In reference to the method of connecting hot water radiators, known as the "top and bottom connection," mentioned in the "Question and Answer" department of Plumber and Steamfitter of the issue of Feb. 1, I have an instance to relate bearing on this very method.

Several years ago I put in the work in the addition to a large hospital in the northwest. Now the old building was heated with hot water and the radiators connected in the usual manner, viz., at each end. We put in a new boiler big enough to carry both buildings. The radiators in the new building were connected after the fashion advocated by "Ottawa," viz., top and bottom. When the job was fired up the circulation in the new building was so much more free and rapid that it pulled



Radiator for hot water heating connected "top and bottom" fashion. The supply thrown into the top and return pipe connection at the bottom In this way the handle of valve does not project higher than top of radiator, at would be the case were valve on supply as is usual.

the heat all out of the old building where the radiators were connected in the ordinary manner, and we had to put on gate valves on the main supply and return on the new building. These gate valves were closed down fully two-thirds before the heat and circulation in both buildings balanced. The amount of radiation in the two buildings was approximately the same, and both buildings were well piped. Trusting this communication may be of sufficient value to publish, I remain,

Yours truly,

JOURNEYMAN FITTER.

PLUMBING BY BOOK OR SCHOOL.

Editor Plumber and Steamfitter,—I notice an article in your paper of Feb. 1, 1910, on "The Value of Having an Understudy," in which the writer, Mr. Denison, makes some assertions in regard to the trade school graduate. He did not put the case strong enough. Why should a boy be obliged to serve from four to six years and in many cases receive but small instruction for his services, when he can, by paying a sum which is moderate in comparison to the benefit received, get more real instruction and practice in six months than he ever could acquire in nine shops out of ten?

The day is past when knowledge of this trade can be bottled up and held in the mind of the journeyman, and for one, I am glad to see it, as we will have better work done in a more systematic manner and with the very latest improvements. Let us advance and not stand still.

Your truly,

X. Y. Z.

Hamilton, Feb. 15, 1910.

VENTILATING A SCHOOL ROOM.

Editor Plumber and Steamfitter.—There is a subject on which I would be pleased to have some information on through the columns of your journal. I would like your opinion on the best position to place ventilating plates, say in ventilating a school room in in connection with a hot air heating system.

FRANK DAFOE.

Madoc. Feb. 25.

It is advisable to admit the hot air from register plate located in wall near the top of the room, say six or seven feet from the floor; while the cold air outlet should be located in side of wall just above the floor. Both these plates to be on the same side of the room. In this way you will get a complete circulation of air but it is recommended that fans be used, or else heat the cold air flue in order to create a current.—Editor.

Gossip of the Plumbing and Heating Trade

Items Gathered in all Parts of Canada—Letters Invited From Subscribers, Giving Particulars Regarding Changes in Firm Names, Contracts Secured, Novel Methods of Advertising or Other News—Photos of Anyone or Anything Connected With the Trade Also Welcomed.

Greenberg & Co., plumbers, Montreal, have been registered.

White & Delaney, plumbers, Montreal, have been registered.

A curator has been appointed for the Ville Marie Plumbing Co., Ville Marie, Que.

Albert [illegible] and Harry B. Tummon, tinsmiths, have dissolved partnership, the former carrying on the business.

H. E. Farmer, of Sydney, has been awarded the contract for plumbing at the Cape Breton hospital at that town.

C. H. Bakemeyer, Ontario salesman for the Canadian Wolverine Co., Chatham, has recovered from a three weeks' illness.

The first shipment of Mannismaun steel pipe for the Esquimalt Water Works Co., Victoria, has arrived. This pipe was brought up from Mexico, having come across the Tehuantepec railroad.

Dr. Sheard, Medical Health Officer, of Toronto, has reported against the installation of a ventilation system in the lavatories at the York Club of that city. The system does not comply with the plumbing by-law.

Secretary A. S. Lamond, of the Canadian Wolverine Co., Chatham, manufacturers of brass goods and plumbers' supplies, stated that the business done by the company during the past year was practically double that of the previous year.

An account of over two years' standing was recently presented to the Toronto Board of Works by Walter Inwood for $695 for plumbing at Riverdale Park. The work done included the steam-heating of the animal houses. Mr. Inwood has been sick for a long time and is now partially blind. It is likely the account will be paid.

Instanter Co., Ltd., is the name of a concern recently incorporated at Ottawa to carry on a general plumbing and gas-fitting business, and also manufacture gas heaters, boilers and water coils. The company is capitalized at $50,000 with headquarters at Toronto. The incorporators are: J. H. Spence, M. C. Cameron and D. D. McLeod, Toronto.

Arthur T. Meagher, who resigned a $1,500 a year position in Western Canada to accept the position of plumbing inspector at Halifax at a salary of $800, has resigned. He is a native of Halifax, and states that when he accepted the position, he was under the impression that his salary would be increased in the course of time. This was not done hence his resignation.

A. J. Jackson, Ontario sales agent for the Amherst Foundry Co., met with an accident which nearly ended seriously while attending a meeting of supply men at London last week. He was riding on the elevator at the Empire Brass Works, when it stopped between floors and Mr. Jackson jumped and fell. Almost immediately the elevator started again and he was pulled away just in time to prevent his head being crushed. As it was he had a shaking up and received a number of body bruises.

The Hydro Electric Power Commission of Ontario have given the steam heating contracts for a number of their stations to the following: Niagara Falls, Purdy, Mansell Ltd., Toronto; Dundas, Rogers, Gibson & Co., Hamilton; Toronto, Keith & Fitzsimons, Toronto; London, Noble & Rich, London; Guelph, Stevenson & Malcolm, Guelph; Preston, Bernhardt & Gris, Preston; Berlin, J. Hainsworth, Berlin; Stratford, McDonald & Henry, Stratford; St. Marys, McDonald & Henry, Stratford. The stations at Woodstock and St. Thomas not being ready as yet the heating contract will be let later, probably at the end of March.

SANITATION AT EDMONTON.

Writing to the Daily Capital (Edmonton), James Murphy, a master plumber of that city say:

"I read with a great deal of interest the report of the Alberta Medical Association meeting in their investigation of the sanitary conditions of the city in relation to the elimination of typhoid and other infectious diseases. This report is very significant as to the present unhygienic conditions of the city. The establishment of a board of health is a splendid move in the right direction.

"It seems to me, however, that the recommendation of pits for outdoor privies is a grave mistake, as the polluted ground round the pits from which poisonous gases are given off, would be a great breeder of diseases. A great deal of discussion has taken place among the authorities and sanitary engineers as to the present system of ventilating sewers and much time and money has been spent in all countries in experimenting with various systems to keep the atmosphere pure in this city. However, no system has yet been tried to prevent the deadly gases from the sewers discharging into the air we breathe.

"The present systems obtaining in this city for ventilating drains consists of an iron soil pipe carried through the lowest part of the roof. This pipe, which is open at the top is the one into which the house fittings discharge and although from the open top of this pipe obnoxious and germ breeding smells are constantly carried into the air, yet they are often fixed in close proximity to windows or low roofs and much of the sickness we have is the result. These gases are also blown into the street from the catch pipes creating an ideal condition for the spread of typhoid and other disease germs. This condition must lower the vitality of the individual and render him more susceptible to attack from disease.

"The establishment of an active Board of Health could prevent ninety per cent. of the contagious disease in this city, so let it soon come."

THE RUNNING TRAP.

By J. F. Brady.

There has been much said and written regarding the use of the running trap on the main house sewer—for and against, but there seem to be many good reasons for its retention and further use as there are reasons why it should be abolished altogether.

It is argued that the flow of water discharged into the sewer from the several fixtures inside the house is retarded to a great extent by the trap on the house sewer line.

The manhole covers on the main sewer seem to afford the only means of escape for sewer gas with the running trap in use for house laterals, and this affords a very offensive condition when the main sewer happens to be run in front parking of houses. The gathering of this gas in the main sewers affords a menace to the life of those men who are compelled to enter the sewers for cleaning or other reasons, especially when a lighted lamp or torch is carried, in that an explosion is probable. The omission of the running trap could in view of this fact, provide a circulation of air through the main sewer as well as the house lateral and reduce this danger to a minimum.

Another objection is the breaking of the vent covers or of its becoming loose and working out of place, thus placing the running trap in the position of a

receptacle for sand, stones, sticks, etc., all of which tend to cause obstructions in the sewer making a great expense to the property owner who must pay the costs for repairs.

The vent grate and cleanout very often project above the grade affording an unsightly appearance to the finished parking or surroundings, giving another argument for its abandonment.

In the opinion of the writer the omission of the running trap would not cause the soil or vent lines to deteriorate to any great extent by the fact of sewer gases circulating through them. With the trap installed, during humid weather especially, the down draft from the soil and vent lines causes odors to emanate from the air grate to be breathed in by persons sitting near or passing by the same and forming a menace to the health of the community. This is undoubtedly obviated where the trap is left off the line because the sewer gas in the main sewers is always of a warm nature and circulating directly through the vent lines passes out above the roof where it mixes with the higher air and is greatly disseminated before it can reach the pedestrians below on the streets.

CANADIAN PLUMBING PATENTS.

The following is a list of patents issued by the Canadian Patent Office on Feb. 8, 1910, relating to plumbers and steamfitters appliances, and furnished by Fetherstonhaugh & Co., Ottawa :

123664. F. C. Anderson, Cincinnati, Ohio, valve chambers for water columns.

123671. A. E. Hager, Toronto, water heating, appliances of cook stoves and ranges. (Canada Malleable and Steel Range Company).

123715. L. M. Cooper, Flint, Mich., steam traps.

123719. W. B. Culver, Carbondale, Pa., valves.

123742. S. F. Hill, Bowmanville, well constructions.

123759. F. W. Leuthesser, Chicago, steam air and watertrap valves.

123769. C. S. Parker, London, Ont., steam traps.

123776. J. S. Roake, New York, filters.

123780. E. Ruud, Pittsburg, condensate collectors for water heaters.

123801. Chas. I. Williams, Utica, N. Y., valves.

123853. A. Ballard, Dunlap, Iowa, means to prevent tanks from bursting by freezing.

123860. F. J. Cole, Schenectady, N.Y., steam boilers superheaters.

123919. P. Riecke, Dessau, Ger., locking and releasing oven doors, and 123920, devices for pressing the doors of ovens.

Plumbing Trade Prospects for the Year 1910

Reports From all Parts of the Dominion Indicate That 1910 is Likely to be the Greatest Year in Canada's History, so Far as Building Activity is Concerned — Record Figures Reported From Many Canadian Towns and Cities, Regarding Building Activity in 1909.

The year 1909 has gone down into the history of the plumbing trade as one of the best in recent times. Manufacturers, supply men and master plumbers were unanimous in the expression of their opinion that it was a "bumper year" for their work. And now that stock-taking is over, and we are near the commencement of another season, the trade is preparing for another such year, and if anticipations count for much, 1910, should equal, if it does not eclipse, the great record established last year.

Taking stock of the past is educative only. It is the building work ahead that means business results. Let us look at some different sections of the country and note what the prospects are for the coming season.

Many Buildings in B. C. Cities.

Vancouver reports indicate "that before the winter is over more buildings will be planned than ever before in a similar period in Vancouver's history." That city's permits for January, total almost $200,000 ahead of the first month of 1909, in that one city alone. Vancouver's building permits last year were valued at over $7,000,000, an increase of 22 per cent. over the previous year.

The same story is true of Victoria. The first month's permits there are valued at $128,985, an increase of 60 per cent. over January, 1909, and if the same rate of increase keeps up during the year Victoria's buildings will have over $2,000,000 spent on them this year. Prince Rupert, where 200 houses went up last year, it is expected that the same number, at least, will be reached this year. Other British Columbia towns, too, expect to see great building in 1910. Take Revelstoke, for instance. The report from that town reads: "Building will be active here this year. New three-storey buildings will cover the sites now occupied by the Climax and Queen's hotels. A. McRae and W. A. Foote intend to erect several residential buildings. The Knights of Pythias will build a hall. It is probable a high school building will be erected and an addition made to the public school. R. Howson & Co. will erect a large furniture store. The Armour Packing Co. will build a warehouse and put in a cold storage plant and the Bank of Comerce intend erecting a fine office building."

Fernie has plans ready for $500,000 worth of building this spring. That city was burned two years ago, and the rebuilding going on is in the nature of a "boom."

Cranbrook reports "good building" prospects for 1910, and the building outlook at Kamloops for the "next few years is very bright indeed."

Prairie Towns Growing.

Calgary last year showed a very high percentage of building gain, (189 per cent.), and indications do not show "that there will be any falling off this year. Last year's permits were valued at $2,400,000.

New Parliament buildings are being erected at Regina and Edmonton, and both these cities, along with Saskatoon, are erecting universities, schools, colleges, churches, etc., as well as a great many residences. Saskatoon last year held the palm with a record increase of 767 per cent. The buildings erected last year at these three centres were valued at nearly $4,000,000. Lethbridge and Red Deer will see much new building during 1910, and Medicine Hat reports building there will "steadily forge ahead," with the opening of spring.

Moose Jaw last year had an increase of 157 per cent., the new buildings there being valued at over $1,000,000.

New hotels are to be constructed at Estevan, Aberdeen and Rosthern, and at Rocanville and Theodore, two of the newer Saskatchewan towns, building operations are very active. There are numberless and nameless (as yet) towns that are springing up in the west as the railways open up new districts, and plumbers will secure a large volume of trade from this pioneer work.

About $2,000,000 in new building permits have been granted at Winnipeg since the Christmas season, and North and West Winnipeg, which last year built, at least 3,000 new houses, will experience similar growth during 1910.

Portage la Prairie, with buildings valued at $195,000 in 1909 showed a gain of 63 per cent., and Brandon with $350,000, a gain of 20 per cent, Both these cities expect the new building this year to exceed the totals spent last year.

Building in Ontario Cities.

Toronto building last year was a record breaker the total being over about $18,000,000, while for 1910 the prediction is made that the total will run over $20,000,000.

All over Ontario prospects loom large. Welland is to erect hundreds of homes this year to house the many workers in its increasing industrial plants. Fort William and Port Arthur, the Soo and

Northern Ontario mining towns are similarly affected. Chatham's building record for 1909 was $115,807, while for 1910 a new theatre and the Modern Malleable Range Co.'s new factory are already planned. Many of Brantford's large industrial firms will erect substantial additions to their plants. A new union township and city school, additions to the Ryerson and King Edward schools, a new separate school, and the new $95,000 collegiate institute are planned.

At Kingston an addition will be made to the metallurgy building at Queen's University, while the Bank of Commerce is to erect a new building. Some $4,000,000 will be spent on Government buildings at Ottawa, and an extra $2,000,000 might easily be added to this for the construction of the new Grand Trunk hotel and business blocks and residences already proposed.

Berlin's permits last year totalled $278,000, an increase of 129 per cent., Hamilton, $1,600,000, an increase of 16 per cent.; London, $850,000, 83 per cent.; Niagara Falls, $80,000, 33 per cent.; Peterborough, $343,000, 44 per cent.; St. Thomas, $160,000, 10 per cent.; and Windsor, $424,000, 42 per cent.

Activity in Eastern Canada.

The same condition obtains in Montreal and throughout Quebec province, and in the east generally. Particularly is this true of Three Rivers, where rebuilding on an extensive scale is going on.

In the maritime provinces conditions are different in that 1909 was a dull building season, while all reports for 1910 state that a big improvement is expected and possibly new building records established. Halifax, St. John, Fredericton, Sydney and Charlottetown, all report good prospects.

Thirty of Canada's largest centres reported an expenditure of nearly $70,000,000 on new buildings in 1909. This year a conservative estimate places the figure near the $80,000,000.

Be Prepared for Demand.

Now all this means, or should mean, something to the Canadian plumbing trade. Last year there was a shortage of baths and enamelware generally, and orders received in the late summer and early fall were from two to three weeks in the filling. Manufacturers had not laid up stocks, and supply men had not sufficient supplies, and were early cleaned out. There was a good call for other plumbing goods, and especially for the smaller sizes of iron pipe. Towards the close of the year brass goods became active, and during the whole summer heating goods were particularly strong in movement.

Conditions are different this year, however, as many manufacturers are working their staffs night and day to lay up a stock for the coming season. Listen to what one of them says: "Our plant is running at the present time full-handed and at its full capacity. Our distribution in 1909 exceeded largely that of 1908 and by a small margin that of 1907. The demand apparently exceeded the supply, and it was difficult to fill orders without delays. We believe that a large demand for our goods is assured for the first six months of 1910, and we are inclined to think that there will be a shortage of such goods as we produce."

The supply houses, too, are putting in a larger and more varied stock, and master plumbers are planning to handle this season's business on a much larger scale than their plans for 1909 permitted.

Municipal Undertakings.

Work on the waterworks and sewage systems at North Battleford will be completed this year.

City Engineer Childs, of Calgary, is preparing plans for a trunk sewer and septic tanks to cost $800,000.

The New Glasgow, N.S., city council is again considering plans for increased water supply at an estimated cost of $175,000.

The Board of Control at Hamilton awarded to the London Brass Co. the contract for the brass work for water mains at $3,000.

The Toronto Board of Control has accepted the tender of the Staveley Coal & Iron Co., Chesterfield, Eng., at $12,479 for cast iron pipe and specials for the main drainage works.

For the repair of the Third avenue sewer at Vancouver $2,100 was set apart; and $1,000 will be expended in continuing the sewer on York street.

The following contracts for sewers have been awarded by the Toronto city council: Algonquin Avenue, John F. Connolly, $687; Baker Street, John F. Connolly, $1,439; Breadalbane Street, Page & Britnell, $496; Clinton Avenue, John F. Connolly, $1,257; Duggan Avenue, John F. Connolly, $1,531; Garden Avenue, John F. Connolly, $1,697; Geoffrey Street, John Maguire, $948; Glendale Avenue, John Maguire, $1,054; Gordon Avenue, J. H. McKnight Construction Co., $199; Gormley Avenue, Page & Britnell, $2,000; High Park Boulevard, John F. Connolly, $1,435; Indian Road, John F. Connolly, $4,487; Keele Street, John F. Connolly, $6,787; Lawton Avenue, John F. Connolly, $3,582; Westminster Avenue, John F. Connolly, $1,124; Wright Avenue, John F. Connolly, $1,258.

Public Buildings.

The G.T.R. will erect a new station at Guelph.

The W.C.T.U. will erect a new building at Toronto, to cost $30,000.

Plans are under way for the erection of a new registry office at London.

Ratepayers of Victoria, B.C., have passed a $184,000 school by-law.

Two, instead of five, fire halls will be constructed this year at Winnipeg.

The Berri Street school, at Montreal, will be replaced by a new structure.

The Bathurst Street Methodist church, Toronto, will erect a new Sunday school.

A new hospital will be erected at Montreal at a probable cost of $25,000.

Work on the new hospital at Ladysmith, B.C., is expected to be begun in the spring.

Tenders will be called in March, for the extension to be made to the Church of Our Lady of Lourdes, Toronto.

The Board of Trade of Trail, B.C., is asking the Provincial Government for a $10,000 appropriation for a new school building.

A Roman Catholic cathedral will be erected at Haileybury, Ont. The contract was awarded to V. Ladouceur, Ottawa, at $90,000.

A new St. Andrews's Presbyterian church will be erected at Sydney, N.S. The contract was awarded to Rhodes, Curry & Co. at $42,000.

The Archdiocese of Toronto will erect a $250,000 seminary at that place. Eugene O'Keefe made a donation of $50,000 toward the building.

The Phoenix School Board is sending a largely signed petition to the provincial government asking for a grant of $10,000 towards building a new school.

Tenders for the plumbing, heating and electric wiring at the new isolation hospital at Toronto, will be received until March 8, by the Toronto Board of Control.

Tenders addressed to A. Asher, Welland, will be received until March 4 for the erection of a Sabbath school building in connection with the Presbyterian church at that place.

The addition to the Anglican church, at Fort Rouge (Winnipeg), will be rushed to completion with all possible speed when spring opens. The foundation has been already laid and some other work done. Estimated cost, $10,000.

General Building.

The Sterling Bank will erect a new building at Winnipeg.

J. W. Spencer, Victoria, will build a dwelling to cost $10,000.

The Molsons Bank will erect a bank building at Knowlton, Que.

J. H. Todd is to spend about $40,000 on a building at Victoria.

F. A. Smart, of Winnipeg, will erect a residence to cost $10,000.

A branch office of the Bank of Toronto will be erected in Petrolea.

The Yorkshire Insurance Co. will erect a ten-storey building in Montreal.

The Canadian Bank of Commerce are to erect a branch bank at Victoria.

Heisterman & Co., of Victoria, will remodel their premises at that place.

The Calgary Brewing Co. are erecting a cold storage warehouse at Melville.

The Westholme Lumber Co., are to erect a four-storey block at Victoria.

Henry Corby, Belleville, porposes to erect a first-class hotel at Kingston.

Dr. Blow, of Calgary, will build a warehouse at that place at a cost of $45,000.

The G. T. P. and the C. P. R. will both erect two new buildings at Montreal.

Plans for the erection of a new registry office for London will soon be under way.

The Terminal City Club, at Vancouver, will erect new premises at that place.

M. Webb has a building permit for ten brick houses at Hamilton, to cost $15,000.

Commander Harrison, of Victoria, is erecting a handsome residence at Crawford Bay.

Tenders are asked by J. D. Ferguson, Saskatoon, for the erection of a business block there..

The Crown hotel at Ottawa was sold for $140,000. A new hotel will be erected on the premises.

A mammoth department store is to be erected by the Marshall Field Co., of Chicago, at Winnipeg.

Plans for a new lodge building for the Knights of Pythias, of New Westminster, are under way.

A building of concrete, steel and brick, will be erected by R. P. Clark, Victoria, estimated cost, $8,000.

The Bank of Toronto has purchased a lot at Yorkton, Man., on which a new branch will be built.

The Victorian Order of Nurses will erect a new home at Vancouver, if a suitable site can be secured.

The Y.M.C.A., of Toronto, will erect four new buildings in that city, at an estimated cost of $600,000.

Plans for an apartment block in Winnipeg are being prepared for R. R. Pattinson and W. W. Fraser.

W. B. McKay & Co., Sussex, N.B., are planning the erection of a big new business block there in the spring.

P. Welsh, the Spokane railroad contractor, will erect a large building opposite the C.P.R. depot at Vancouver.

The James Bay Athletic Association, at Victoria, held a meeting and discussed the proposition for a new building.

The Y. M. C. A. directors of St. Thomas will erect a new building on the site of the present one, opposite the City Hall.

Building permits have been issued recently at Vancouver as follows: J. Douglas, five houses, $10,000; J. R. Reid, $2,500; H. R. Walsh, two houses, $3,800; Catholic church, $2,000.

Work has commenced on what will be the largest building in Victoria. This is the eight-storey block to be erected by J. A. Sayward, on Douglas Street. The building, will cost $200,000.

Recent building permits at Montreal include: Hall Bros., warehouse, $6,000; J. T. Davis, dwelling, $6,000; Jas. Jacob, dwelling, $7,000; St. Aloysius Parish, house, $10,000.

Architect Sinclair is preparing plans for Contractor Bullock for the large apartment house at Brandon. Building operations will commence as soon as spring opens. Estimated expenditure $100,000.

The following are the recent building permits granted at Toronto: Wm. Green six pairs semi-detached dwellings, $18,000; R. C. Bustard six attached stores and dwellings, $15,000; R. W. Tuthill, three dwellings, $13,000.

Architect Frank Evans, Winnipeg, has awarded the following contracts for a five-storey warehouse to be erected in Winnipeg for the Paulin Chambers Co.: General contract, Phil. Burnett, Winnipeg; iron work, Manitoba Iron Co., Winnipeg. The building will cost $30,000.

The C. P. R. will build a large hotel on the northern end of Arrow Lake, Arrowhead, B.C. Plans for the building are complete, and work on the new building will be commenced shortly. The structure will be similar in some respects to the Chalet at Lake Louise, and will cost $100,000.

Building continues active at Victoria. Permits for over $100,000 were issued during February. The most important and larger buildings to be erected are: A two-storey building to be erected by H. W. Davies, to cost $15,000; a three-storey block for Dr. Garasche, to cost $13,000, and a $6,000 building for H. W. Davies.

IMPROVED GAS WATER HEATER.

The use of a gas water heater of the ordinary type to obtain hot water instantaneously without a water boiler, which is generally considered necessary, is explained in the following contribution of C. L. Wight, Honolulu, to the Wrinkle Department of the Pacific Coast Gas Association. These heaters, he states, can be set up in the kitchen, with connections direct to the sink, bathtub, etc., or in a bath room as a substitute for the more expensive nickel-plated heaters.

The objection will at once be raised that if the water boiler be eliminated, the heater will be liable to explode if the water outlet be closed while gas is turned on. One need have no fear as to this point. As soon as steam begins to form, the water hammer calls attention to the heater at once, but if any member of the association is skeptical as to this point it will be a very easy matter for him to fit a cock to the water outlet and experiment for himself, leaving the gas lighted—say for half an hour. It is necessary, however, that the water be not shut off before it comes to the heater, and the only trouble we have experienced has been due to this cause. Out of over 100 heaters that have been in use for over a year, we have only had three complaints, and as we are careful to notify consumers to be sure that water can reach the heater at all times, there was no kick in these cases. While any heater may be used for this purpose, we have secured the best results from one having a double copper coil close wound.

We have had many complaints from consumers using nickel-plated heaters that the water was sooty. This was caused by the draft. In some cases we could overcome this difficulty by placing down-draft hoods immediately over the heaters. In other cases we have had complaints with heaters of this class that the water was green. Where these evils could not be remedied, we have substituted the heaters above described, and in no case has there been any further complaint. One of the great advantages of using this class of heater for instantaneous work is the fact that the coil and burner are accessible, so that the consumer can clean the same himself without expense.

Before we fitted up heaters in this way, consumers were constantly complaining about their gas bills. Further, we found it difficult to sell gas ranges to replace coal and wood stoves because it cost so much for hot water. Since making the change to direct-connected heaters, we have doubled our sale of ranges, and we are now selling five heaters where we only sold one before. The bathtub is raised 18 in. above the floor, so that the water can be reached without stooping. The gas pipe is connected to a meter reading at one hundredths of a foot, so that the customer can see at a glance just how much gas will be required to heat a tub of water.

Consumers can thus see that our statement that a bath costs from three to four cents with $1.50 gas is correct. Further, where a consumer does not understand the use of a heater or has any trouble, it is very easy to locate the cause. Since making this change, our complaints as to water heaters have practically ceased, and our business has increased materially.

FAILURES IN CANADA.

Three-fourths of the 1,588 failures in Canada in 1909 were due to the faults of those failing, while four-fifths of the liabilities belonged to the same division, according to figures supplied by Bradstreet's. As regards the number of failures, the proportion is not materially different from 1908; but respecting the liabilities, it is to be noted that the proportion was 79.9 per cent. in 1909, against 86.8 per cent. in 1908. Incompetence and lack of capital represent a smaller portion of the total number of the failures embraced in our data for 1909 than fell to them in 1908, while fraud, neglect and competition were larger in their effects. Lack of capital remains the leading source of trouble, with specific conditions second and incompetence third. The first mentioned cause produced 42 per cent. of the failures and 43.3 per cent. of the liabilities; the second accounted for 22.4 per cent. of the failures and 18.4 per cent. of the liabilities, while to the third goes 15.7 per cent. of the number and 17.5 per cent. of the liabilities. Fraud, the fourth most detrimental cause, originated 7.8 per cent. of the failures and 5.9 per cent. of the liabilities in 1909.

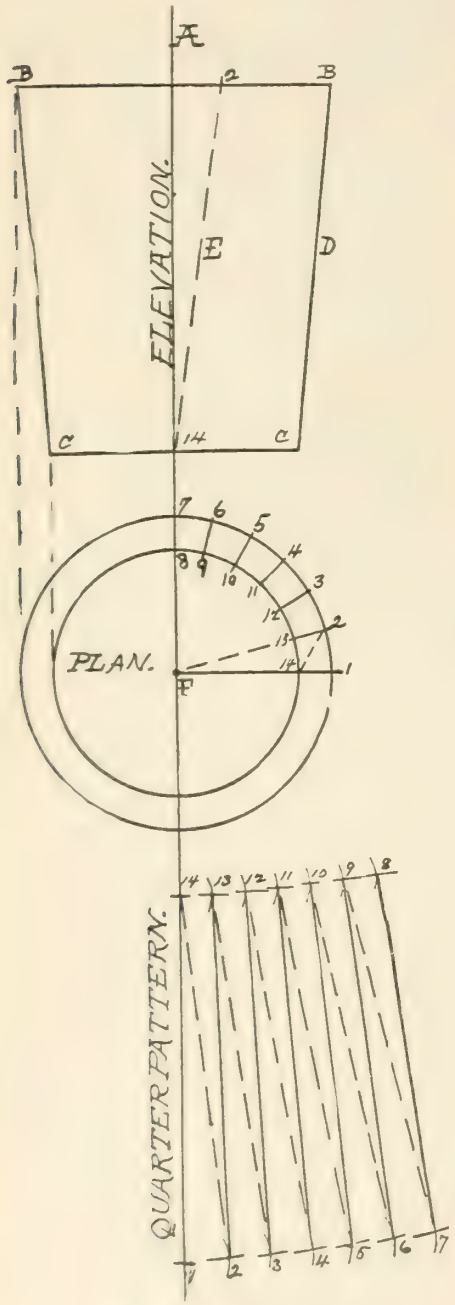
due to	1909	1908	1909	1908
Failures	Number		Liabilities.	
Incompetence	15.7	18.2	17.5	15.6
Inexperience	2.9	2.8	6.7	2.2
Lack of capital . . .	42.0	43.2	43.3	59.0
Unwise credits . . .	1.2	1.0	2.5	1.0
Failures of others .	1.5	1.5	1.1	1.4
Extravagance	1.0	.4	1.0	.7
Neglect	3.9	3.2	2.4	2.3
Competition	1.2	.5	.6	.6
Specific conditions..	22.4	22.9	18.4	11.2
Speculation	.4	.5	.6	1.4
Fraud	7.8	5.8	5.9	4.6

Cutting Patterns in the Tin Shop

Readers of Plumber and Steamfitter are Requested to Make Use of this Department—Questions Regarding Patterns Will be Answered by Experts—Discussion is Also Invited on Any Matter pertaining to the Tin Shop.

FLARING ROUND PATTERN.

In describing a flaring round article secured by triangulation, J. A. Wright, in the American Artizan, says:—Draw a centre line A, and on that the elevation as shown by B B and C C, any size



Flaring Round Article.

desired. Using F as centre, draw plan equal in diameter to C C and B B. Divide a quarter section as 1 to 7, and with F again as centre, dot the inner circle as 8 to 14. Now take the length of 14 to 2 of plan and transfer to A 2 of elevation, and the broken line drawn to 14 at A line shows cross section to be used in securing pattern. As an illustration we show here a quarter pattern only. For the pattern take the length of D from C to B, and draw 1 to 14 of pattern. Next take length of E with your dividers or compasses, and with one point at 14 of pattern draw 2, now 1 to 2 of plan and draw 1 to 2 of pattern. Now length of D from C to B, and draw 2 to 13 of pattern; then 14-13 of plan and draw 14 to 13 of pattern. Again the length of E and draw 13 to 3 of pattern. Next 2 to 3 of plan and draw 2 to 3 of pattern.

Follow this method throughout, using first D and then E, also 14 to 13 and 1 to 2 from plan to pattern and elevation to pattern, as herein described.

CAUSES OF SMOKY CHIMNEYS.

There are two principal causes why a chimney should smoke. A long flue full of cold air, and itself built of cold material, is one. To prevent the flue from cooling too much or too suddenly is the only sure preventive. This, as all architects know, is done most surely by grouping the flues together in the middle of the house, so that all are kept more or less warm from their proximity to that from the kitchen range, which is in use all the year round.

If, as happens in many houses, there are distinctly two sections—one devoted to the kitchen and the other to the household—two such groups of chimneys have to be formed and the household group has often to run the risk of being idle for a great part of the year, unless, indeed, it is possible to carry up within it a flue from a basement heating apparatus, which is used for hothouses. An interesting discussion of the subject was given recently in the Building News, of London, as follows:

From what has been said it will be recognized that to put a fireplace on an outside wall is to invite disaster. Many careless designers think little of doing this, considering nothing else than the position of the fireplace in the room, or the artistic effect of an external chimney. The discomfort caused by smoke, however, has to be reckoned with as well as the initial cost involved. It is clear that a flue which abuts upon the external air will cool quite rapidly, and the smoke difficulty may occur when lighting the fire in the morning after a hard night's frost, just as in the early autumn after a summer's rest. All the same, occasional external chimneys cannot be avoided. Where they are used, wisdom suggests that they should have a thick outer lining, instead of the usual 4½ in. of brick work, though comparatively few people, in these days of reducing prices to a minimum, think of doing this, except in high-class work. Tall chimneys, too, where they rise for some distance above the roof, ought to be at least 9 in. thick externally, if rapid and undue cooling of the contained air is to be avoided. Yet it is rarely indeed that they are made so substantial as this, unless they are of stone instead of brick.

Another prolific cause of smoky chimneys is down-blow, resulting either from some accidental depression of the wind or the relative position of the chimney with regard to some neighboring tall building, or trees, or even a neighboring hill—anything, in fact, which can cause a depression in the current of air with a strong wind blowing from a certain quarter. This evil is most acute, as a rule, in towns; while fireplaces on the top story of a building are more affected than those from the rooms below. It is recognized by the smoke puffing out in sudden bursts, corresponding with the gusts of wind. The means of cure are obvious.

Either the chimney must be carried up to a sufficient height to avoid the cause of the down-blow, or else a specially constructed chimney top, or cowl, must be used. There are many parts of Europe—hilly districts, most of them—where the open top is rare, the two sides of a flue being carried up, and a heavy stone lintel laid across, so that the smoke escapes laterally and not vertically, while any depressed current is prevented from entering otherwise than across the flue top, passing through the opening rather than down the flue, and so helping rather than retarding the draft. A chimney such as this can generally be made picturesque, so that its adoption is often worth consideration.

Another cause of smoke is an ill-constructed grate, with, perhaps, too small a hood or canopy, and insufficient ventilation. Nowadays, the fireplace has received so much attention that a badly constructed one is much more difficult to obtain than formerly; but there are still many people who bottle up their rooms so completely that it is not easy for enough air to be supplied to carry the products of combustion up the flue. It must always be remembered that the flue, when the fire is lighted, acts as an outlet ventilator, up which there is a constant current of air. Consequently, there must be the same amount of air introduced into the room which the chimney serves, and, if this required amount is not allowed to pass in through sufficiently large openings, it will be drawn in through narrow cracks and so cause drafts. The natural inclination of the most people is to stop a draft by closing up the opening through which it passes, and so by reducing the inlets the supply of air to the grate becomes insufficient and the chimney "smokes," because the smoke is not carried off with sufficient rapidity.

PLUMBING AND HEATING MARKETS

MONTREAL.

February 26.—Again no change is to be reported in prices, the market remaining firm, but without any advance in the prominent lines. Supply houses state that orders continue to show up well, not only locally but from those districts which purchase from Montreal. Buying is not only extending, but is individually getting heavier. Good round lots are accumulating for the first boats to the St. Lawrence ports.

As the opening of the building season approaches the prospect looks more favorable than ever for very busy times. Architects are now engaged on plans for fall building so that conditions look exceedingly promising for a continuance of the spring movement.

Plumbers are on the whole fairly busy. Some are engaged on contracts which will last them into the spring, while with others jobbing work is keeping the shop going. Manufacturers are working up stock, but from appearances it would seem that some lines will face a shortage before many months of active demand are over.

Soil Pipe.—Soil pipe is still in good demand, not only for future requirements, but for immediate wants which is rather unusual at this time. Heavy consignments will go by the first boats, and prospects look exceedingly healthy. The market is firm, and we quote light 60 off, and heavy 70.

Lead Pipe.—Fair quantities of lead pipe are being sold, and the trade is very good for this time of the year. Users are accumulating stock. The market is unchanged and we quote: Pipe and waste at 25 off; traps and bends at 50; caulking lead, 5c per lb.

Solder.—Solder continues to be in fair demand, the continuance of the jobbing work helping the call. There is no change in prices, and we quote half and half 20c, wiping 18½c.

Iron Pipe.—With other lines a satisfactory movement is noted in iron pipe and prospects look very favorable for heavy trade next month. The market is unchanged, and we quote: ¼-in. black, 63; galvanized, 48; ⅜ black, 59; galvanized, 44; ½ black, 69; galvanized, 59; ⅝ to 4-in. black, 71½; galvanized, ¾1½.

Radiators end Boilers.—No change is announced in prices, and the market is firm with little cutting. Prospects look favorable for some heavy business, and manufacturers are preparing for a record season. We quote: Steam boilers, 60 and 5; hot water boilers, 50 and 10; wall and hot water radiators, 50 and 7½; steam radiators, 50, 7½ and 2½ per cent.

Scrap.—The scrap market is quiet, and there is little offering. Heavy copper wire, 11c; light copper bottoms, 10c; heavy red brass, 10c; heavy yellow brass, 8c; light brass, 6¼c; tea lead, 2½c; heavy lead, 2¾c; scrap zinc, 3c; cast, $15.

Metals.—A shortage in lamb and flag spot tin caused tin prices to advance 1c. The other metals are unchanged. We quote: Tin, 35c; copper, 14½c; imported lead, $3.75; domestic lead, $3.70.

TORONTO.

February 28.—The condition of the plumbing market is much the same as it was a fortnight ago. Estimating and inquiries are more prominent perhaps, but booking is going on just about as it has been since the turn of the year. This week, however, should see the opening of the spring business so far as shipments and deliveries are concerned and just so soon as the frost is out of the ground building operations will begin.

There are one or two price changes. Three styles of second grade enamelled baths declined 50 cents on February 15, just after the last issue of Plumber and Steamfitter had gone to press. Soil pipe has declined temporarily, but is expected to advance again, and malleable fittings are easier.

Master plumbers report jobbing work as fair at present, and several of them say their hands are completely tied up with repair work.

Enamelware.—Manufacturers are fairly well prepared for an active season, and supply houses are trying to stock up in anticipation of heavy demands. Booking has been encouraging since the opening of the year, and this week should see the opening of the delivery season. There is a reduction on three sizes of second grade Standard Ideal baths of 50 cents each. Instead of being quoted at a net price these baths, Nos. 71, 72 and 73, have gone back to the old discount list price of 30 and 10 off. The decline amounts to about 2½ per cent. This change took place on Feb. 15, but too late for our last issue.

Soil Pipe.—Because of some disagreement manufacturers have been cutting a little on soil pipe lately. It was generally thought that the failure of the the Central Foundry Co. of New York, would throw a quantity of soil pipe on the market both in the U. S. and in Canada, but so far this has not taken place. The present price of light pipe is 60 and 10, with fittings 70 and 10, the extra 10 per cent. in both cases being decline since last issue. It is said that by next week pipe will go back to the old figures.

Brass Goods.—Because of unstable prices in the past business has not been satisfactory of late. It is believed, however, that an understanding will be arrived at whereby quotations will be more nearly equal. The market prices are yet at the old figures. High grade compression is 60; medium, 65; and standard 70 per cent. Fuller work is also 70.

Iron Pipe and Fittings.—Malleable fittings are easy just now, though the quotation is unchanged from 60 to 65 per cent. Standard bushings still range from 60 to 70 per cent.; and supplies 70 to 75 and 10. Good demand still exists for all sizes of iron pipe.

Lead Pipe.—This line has been in better demand of late and by April and May is expected to show much activity. Prices hold steady. Pipe and waste are 25 per cent. off; caulking lead is 4¾c, and traps and bends 50 per cent.

Solder.—Steady business is yet transpiring. Stocks are plentiful. Prices are fairly firm. Wiping ranges from 17c to 18½c, and half-and-half from 18c to 20c, unchanged since the beginning of February.

Boilers and Radiators.—The heating situation remains unchanged. Anticipations for big business are good. Hot water boilers and radiators are 50 and 10 off, and steam radiators 50, 10 and 2½.

Metals.—All metals are slightly firmer, although actual quotations are the same as a fortnight ago. Tin is 35c; copper 14c to 14½c; lead $3.85 (imported), $3.75 (domestic). Old metals: iron, 8c to 11c; lead, 3c; zinc, 4c; copper, 9c to 11c.

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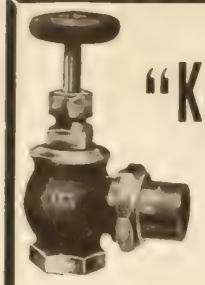

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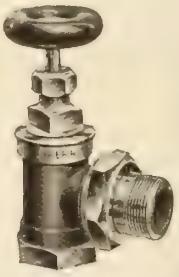

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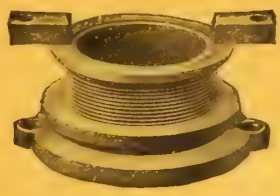

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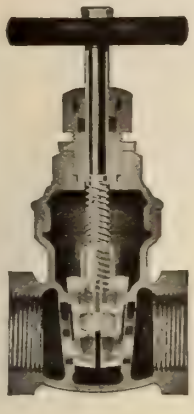

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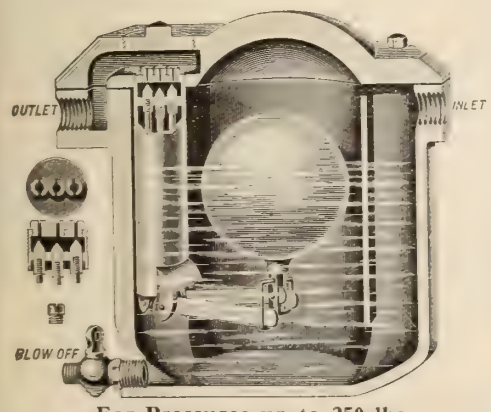

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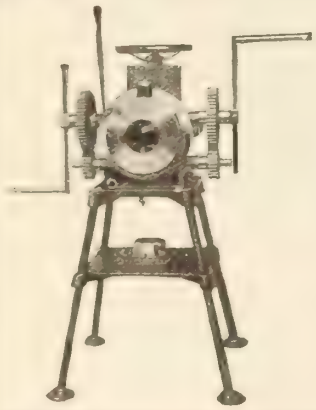

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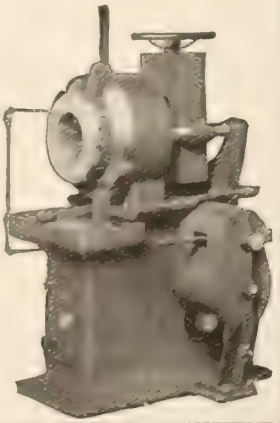

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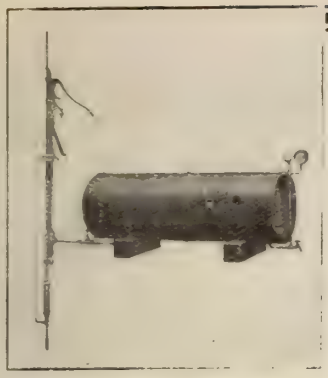

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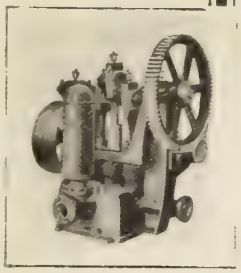

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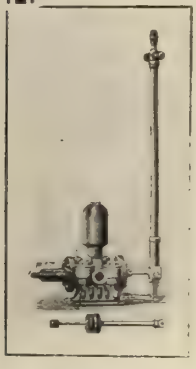

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Yours truly, AUGUST COLT.

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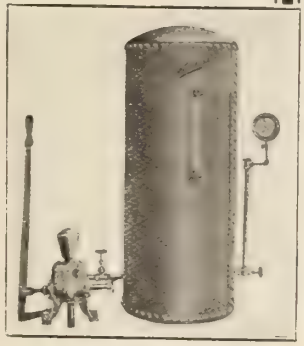
TANKS We handle every kind of tank—Pneumatic, Storage, Gasoline and Oil, and are in a position to offer best prices in Canada.



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National Equipment Co.

Lombard Street

TORONTO, - CAN.

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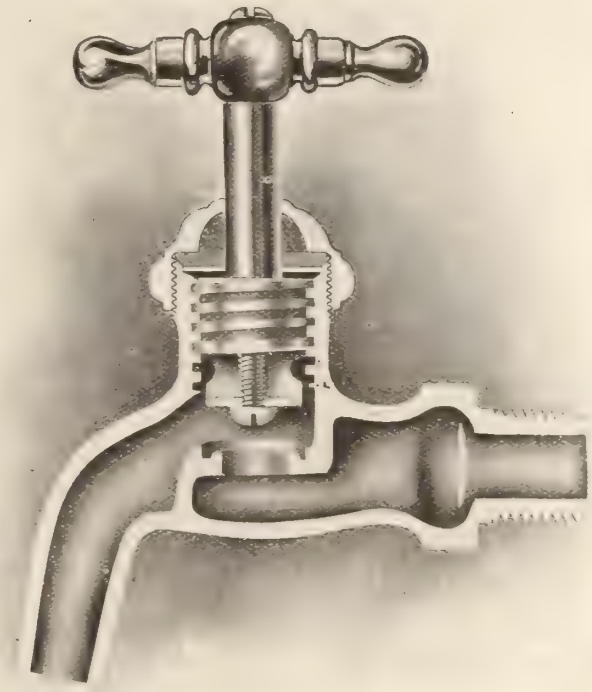

"Canadian" Quality Compression work, illustrated above, will relieve you of all your **trouble** in that respect with absolutely **no cost** to you.

Every piece bears our name, is thoroughly tested and

Unconditionally Guaranteed

"They are made to stand it."

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Circulating amongst Plumbers, Steam, Hot Water and Gas Fitters, Sanitary Inspectors, Heating and Ventilating Engineers, City Engineers, Boards of Health, Architects, etc.

TORONTO, MARCH 15, 1910

TRADE ASSOCIATIONS LEGALISED.

Chief Justice Falconbridge in rendering his decision last week in the proceedings begun by the Crown against the Wholesale Grocers' Guild in the Hamilton Courts in 1907 has done himself honor by rendering a decision based on sound business common sense, although in our opinion he erred in his comments upon the "Plumbers Combine" cases of three years ago, in which he held the Plumbers' Supply Association responsible for the acts of individuals, etc., years before the association came into existence.

No business men, as a body, are willingly criminal in their actions, although the editorial comments of some newspapers on the Grocers' Guild, tack association and plumbers' combine trials of a couple of years ago were such as to practically accuse any merchant who joined a trade association of dishonest actions or intentions. Judge Falconbridge's decision clears the air and a change in public opinion regarding trade associations is already noticeable.

It is now admitted that in order to overcome unfair competition, business men have simply got to get together or run the risk of failure. The wholesale grocers found that they were handling large quantities of staple goods and were, in some cases, unable to make sufficient profit to cover the cost of handling the goods. The loss on staple lines had to be made up on specialties. This condition was unsatisfactory and they organized their guild. The law was not clear as to what a trade association could do and charges were made that they had unduly enhanced prices and were a "combination in restraint of trade." The case was tried and over 1,000 pages of typewritten evidence was taken. Authorities were looked up and a careful study made of all the legal aspects of the case. Then the following judgment was rendered:

1. The defendants have not, nor has any of them, intended to violate the law.

2. Nor have they, nor has any of them, intended maliciously to injure any persons, firms or corporations, nor to compass any restraint of trade unconnected with their own business relations.

3. They have been actuated by a bona fide desire to protect their own interests and that of the wholesale grocery trade in general.

As far as intention and good faith or the want of it are elements in the offence with which they are charged, the evidence is entirely in their favor.

Have they then been guilty of a technical breach of law?

This question is answered by the citations which I have given above and which cover every branch of the case.

I, therefore, say that the defendants are not, nor is any of them, guilty as charged.

There are minor matters as to which I, sitting as a jury, give the [illegible] to the benefit of the doubt, and as to which I warn the defendants and those in like case to be careful e.g., as to alleged efforts to coerce wholesale dealers into joining the guild.

It is of the essence of the innocence of defendants that the privileges which they seek to enjoy should be extended to all persons and corporations who are strictly wholesalers, whether they choose to join the guild or not.

New law on on the subject of trade associations has been established as Judge Falconbridge's decision will undoubtedly be quoted in all future cases in which combinations of business men are accused of acting in restraint of trade.

From the decision it is now clear that business men have the right to organise for mutual protection if they do not unduly enhance prices. The law is intended to protect the public from a combination of men who may organise to limit the supply of a certain class of goods or, by combination, to cause an undue advance in prices. But there the court's duty ends and the trade associations are free to adopt such rules and regulations as they find necessary to properly conduct their business and protect their interest from business pirates.

A wholesale association, for instance, while it cannot adopt a rule that its members must not sell to consumers can as we understand it, regulate prices in such a way that a retailer can be quoted a fair discount on the prices non-retailers would be asked to pay and, following this rule, large buyers can be quoted larger discounts than smaller buyers.

Trade associations should be educational in their work, the aim being to bring about a more friendly feeling and create conditions which will make it possible for merchants to "live and let live." In this way merchants who are able to buy in large quantities will not use their power to squeeze smaller competitors out of business, but rather to keep to themselves the larger profits resulting from their greater buying power. Organizations which aim to create high prices are doomed to failure, while associations which aim to develop friendship and co-operation among their members are certain to succeed.

It is interesting to note, that while the Grocers' Guild has been declared "not guilty," no provision has been made by the Crown to compensate them for the heavy costs of the trial, amounting to $19,000. Much has been said about the public being "at the mercy of combines," etc., but it is evident that the boot is on the other foot. Public opinion demanded an enquiry into the Grocers' Guild, and a long trial resulted in their being found "within the law," yet it is the guild, and not the public that has to pay the costs of the winning party in the suit.

VENTILATING BUSINESS PLACES.

F. A. in Toronto Daily Star.

It would be impracticable to carry the mouth of the cold-air shaft so high as to be entirely above the smoke-line. But it should be not less than twenty or thirty feet from the ground, and so arranged as to prevent the wind from blowing directly into it. The mouth of the intake, or, more properly speaking, the nostrils of the building—for we are really trying to make the building breathe—should be protected from those things, such as dirt and ashes, near to the ground; because nature house-cleans frequently, especially in the spring and fall. She uses whirlwinds to clean out dirty corners, and storms to carry dirt away, and rain and lightning and sunshine to wash and clean the air, and make it pure and sweet for the use of all living things. Yes, nature never neglects her laundry work, not even in cities, where man has done his best to make things foul by leaving back-yards filthy, and having narrow and muddy lanes and streets, and bottling up poisonous gases in sewers and closets and tanks.

Out in the broad world the wind, in its eagerness to get a bath, tries to dive into the bosom of the deep; it pushes great waves to the shore and dashes them into foam against the rocks, and carries off the sprays in clouds on its wings; and then rubs itself dry on the waving fields and groaning forests of the landscape beyond. The lightning shoots and flashes in sheets and tongues of fire from earth to heaven and from heaven to earth again, and the thunders roar and knock, and jar the earth; and the rain comes in gusts and swishes against the window panes, and children cease their prattle, and nervous people turn pale in lurid glare, and hide themselves in dark places. This is not Jupiter Pluvius on a jaunt, it is simply Old Dame Nature's wash day; and you know what wash day is at home—doing evil that good may result therefrom.

A source of danger to be avoided is the discharges from pipes that are brought from lavatories and carried through the roof, instead of into the chimneys, where the odors and gases would mingle with the smoke, and be rendered harmless. There should be a city by-law to this effect. We have seen what pains nature takes to mix and purify the air generally, and what extra pains she has taken in the nose, throat, and windpipe to warm, moisten, and cleanse it before it is finally delivered to the lung cells. We should try to imitate nature, and should begin ventilation by taking in pure air only; just as we should begin taking in pure water only. If our City Fathers had an ounce of horse sense they would order our inert officials to extend the intake out into the lake beyond the dirty-water line. Then no filtration or ozonization would be necessary. Similarly we should run up our fresh air intakes above the dirty-air line. But every building cannot have a tower like the City Hall, except, perhaps, the churches. They should have their intake in the spire, and tear out the clanging, nerve-racking bells that mar the calm and peace of the quiet Sabbath day. If the air came from the spire, more prayers would ascend beyond the ceiling, and less operatic singing and sensational preaching would be required to fill the pews, and keep the listeners awake.

Theoretically, then, every city building should have an intake air shaft 150 feet high. But, financially and artistically, this would be impossible; hence we must use the less pure air from lower down, and try to purify it by the means which I am about to suggest. I use the word "suggest" because I am not an architect, nor a builder, nor an inventive genius, yet I'll risk the following:

The mouth of every intake shaft should be large and covered by two gratings, between which a mat of cotton batting, or some other dust-catching material, could be placed; when this became foul, it could be replaced by a fresh one. Then on the inside, projecting shelves could be placed alternately on one side then on the other; over these, water should be allowed to fall, hot in winter, cold in summer, dripping from one to the other; this is done in smoke-stacks of meat factories to prevent the escape of odors. This would wash the air, and tend to give it the proper temperature and degree of moisture, the same as the nose and air passage does in the animal structure. At the bottom of the shaft the fan should be placed to draw the air from without, and force it through numerous small openings into a large receptacle, there to be mixed and have its temperature further regulated.

In cold weather, the air in this receptacle should be warmed, not burnt. This is one of the greatest mistakes that we are guilty of in our present-day system—we overheat the air. If we took burnt meat and burnt bread into our stomachs, we would find that our bodies would not be nourished, and that we would soon have stomach troubles. The same thing occurs when we breathe burnt air; our bodies are not nourished, and we soon have lung troubles. And the consumption germs creep in, and then we shed tears of sympathy for the dear friend or the beloved relative who is burning up with the dread disease, and coughing and strangling and gasping for breath before the open window. Yes, we have opened the window at last, but, alas, too late! All cases of consumption are caused by breathing bad air. No child is born with the germs in it; they come in afterwards.

PLUMBING INSPECTOR NEEDED.

The special committee appointed by the St. Thomas Board of Health to consider the diphtheria outbreak, reported that the plumbing about the city was in bad condition and the lavatories of Scott, Wellington, Myrtle and Balaclava Street schools were poorly ventilated and unsanitary. Medical advice was to the effect that the lack of ventilation had nothing to do with the outbreak, but that bad plumbing might have had. The committe recommended the appointment of a competent inspector of plumbing, and the report was adopted.

Soon all the small cities in Canada will have plumbing by-laws and inspectors, and only Hamilton and London will remain without regulations or inspectors and markets for material rejected by the trade in other cities.

A PLUMBING TRAVELER'S OPINION.

Editor P. & S.,—You will find enclosed cheque for $1 in payment of subscription for Plumber & Steamfitter.

I might say that I always enjoy reading the Plumber & Steamfitter and receive a lot of valuable information. I remain,

O. L. ROBB,
Empire Mfg. Co., Ltd

London, Feb. 28.

MANY USEFUL AND PRACTICAL HINTS.

Editor P. & S.,—I enclose a Post Office order for $1 payment of one year's subscription to Plumber & Steamfitter during the past year. I have found many useful and practical hints in this magazine and think it is alright. I trust that it may in the future meet with the appreciation which it deserves.

W. J. CRANE,
City Clerk.

Wetaskiwin, Alberta, Feb. 25.

Some Anomalies in Modern Plumbing Regulations

Discussion on Address by J. Pickering Putnam, at Boston—The Utility of the House Trap Argued—Practical and Theoretical Men Disagree—Conclusion of Discussion in Next Issue.

In opening the discussion on the address David Craig, ex-president of the U. S. National Assn. of Master Plumbers, said: Mr. Putnam's lecture has been very entertaining, and though, of course, there is room for a good deal of discussion on some of the points he has raised, I do not think it advisable at this time to go into them to any great extent. I will say in passing that he has the law a little bit strained, because you can put in a system of modified trap vents under the present law; the law is not very well understood. We have only been working under it for about a year, and there are modifications that have not been taken advantage of at all. In regard to trap testing, I have been doing that same work for the last ten years myself in connection with the North End School on the apparatus shown in one of Mr. Putnam's slides, and, as a matter of fact, it has been part of the work of our national association for the last two years to determine what was dangerous to health in sewer air. The plumber was not the father of the back-vent law in its inception. Sewer gas is not a good thing to have as a steady diet. Consequently, we are inclined to be guarded in what we do in the matter of this connection. In the meantime we have gone hysterically into this matter of plumbing legislation. Everybody who had anything to say about the mysterious qualities of pipes and plumbing had his ideas worked into the laws, the plumber naturally going with the public. Now, aside from the question as to whether a mechanical trade should have law—and that is a very broad question—I am in doubt, and some of you folks are in doubt, as to whether legislation should apply to us as a craft—and that is what we are, craftsmen, not professional men—and we should have been left to pursue our calling in a simple manner. To be wise under those conditions is pretty hard. To come out with safety may be still harder. Now we are on the road back. We will go with you or the public so far as we think it is safe. The intercepting trap is a moot point in certain sections of the city where steam is allowed to escape into the sewers of the city. Mr. Putnam will say it must not escape, but it does.

Mr. Putnam.—Oh, no; I don't say that.

Mr. Craig.—I am using you as a figure, if you please. It will be said that steam must not escape, yet the fact remains that it does escape, and we have got to deal with that condition. During the time of my investigation I was called upon to remove a trap for the Transit Commission, made obligatory by some of their demands, and there were at least three inches of steam pressure, and the lead in the trap joint was driven out. If it had not been for that trap every joint in the house would have been in the same condition.

Codes Take Away Plumber's Skill

Mr. Putnam.—What joint?

Mr. Craig.—The joint at the running trap, the intercepting trap. Now, we are crude in this matter of jointing, very crude, indeed, and I admit that Mr. Putnam is skilful in getting away from the lead joint. Other methods are better. People who have made special studies of sewer air and sewer conditions were the ones who were responsible for the hysteria about sewer air in the beginning. It was not the plumber. He did not know about these things but accepted the word of those who ought to know. Now we are traveling back and we want to go carefully. Witness the expense to which our national association has gone to determine if possible just what we shall do and just where we shall go. The passing of codes, the building up of fabrics of law in regard to a simple craft like ours is wrong. When the last word is said, it means that the code obliterates the personal equation altogether. Nationalism obliterates ambition, or at least nullifies it, and in the same manner codes for the mechanic take away his skill. That is the history of it. When we make laws governing the skill a man might employ in erecting anything, if that law obtains and is part of the administration of his daily life, his skill goes with it. The result is that you want trade schools, and want them more and more.

Now, with those conditions, the plumber is standing in a place where he says that he will want to know before taking the next step, and the next step beyond that he will want to know, and he will go on in that way and in that way only. At the present time there is a committee, consisting of representatives of the Real Estate Exchange, the Civic League, the Society of Architects and the Master Plumbers, and, I think, one other society, which meets each week to discuss modifications in the present law. It has been told me by those who are in a position to know that it is very rarely that a law is passed which is workable without one or two years of amending afterward. This is the first year. We don't want as a body of men to pose before the public, as we have been forced to do, as extortioners or as self-seekers who trade on the public fear. Not at all. It is not the plumber's desire to do anything of that kind. I think, in saying, that, I voice the opinion of the great body of my confreres. We are just as proud and just as ambitious to pass on to our children the fact that their fathers were in an honorable calling as you are. We have the pride of calling and we have the pride of place, be it ever so humble. It is there as surely as it is anywhere. We are willing to go any distance to approve the proper conditions for plumbing. In the meantime the great extensive bulwark of administration has grown around this matter of plumbing. Now from the very conditions created by the law you will find it difficult to amend your plumbing law. Those conditions crystallized the administrators themselves into organizations that are a power just as much as you are and as we are. So this thing is not as simple as it might appear at first flush.

Now, in a practical way, as to plumbing conditions as practised to-day by our craft. In the city of Boston I don't know but what we have as simple a form as we might have, apart from the trap as criticised by Mr. Putnam. I find that the maker of the trap —and this is a very essential thing—the maker of the trap knows just what to charge to stand between you and the loss of that air pipe. That is done. That is a fact. The omission of a piece of pipe running over there from a bowl that might set in that corner to the main vent pipe—the omission of that pipe, I say, is exactly balanced by the price of the trap.

Mr. Putnam.—That is not so—not when patent traps are used.

Mr. Craig.—We have to use patent traps. We have to do it. I beg to differ from you.

Mr. Putnam.—Explain why.

Mr. Craig.—The department says only this is allowable.

Mr. Putnam.—That is what we all test for.

The Pot Trap.

Mr. Craig.—Coming to the pot trap. We have made a number of tests each year, and two years ago we tested expressly for the National Association of Plumbers and we found that the special trap of Mr. Putnam's is unbreakable. But here we have a pot trap with inlet and outlet set at right angles. In every one of Mr. Putnam's illustrations you will notice that the inlet came in on one side and the outlet went out opposite to it, so that in reality it is simply a bulb of water around an S-trap. We found that where the inlet came in on one side below and the outlet went out at right angles above it it was almost impossible to siphon the trap. If you will note, the best and clearest definition of that was given to me by Mr. Frederic I. Tudor, who said you want the water to roll away and the air to go by it. In this case the water is thrown up. The air strikes it and the impact drives it over to one side and the air goes up and passes by. That is a strong form of pot trap and one frequently used. But you can't write it into ordinance.

Last year we believed that the man with a large venture downtown for office buildings would be allowed to waste five or six water-closets without any trap vent, returning only into a general vent line. And that was allowed. And to put the three flat houses on the same basis we had this done: The top fixtures of the houses within 5 feet of the soil pipe are not vented. All the top fixtures within 5 feet of the soil pipe are not vented. No matter whether they be three, five or ten, if they are within 5 feet of the soil pipe you can leave off the vent pipes because the pipe going through the roof answers. We said, if that is allowed on the top floor, why not place the second floor on the same basis by a vent line? And that was done. And it was carried to the first floor, where there was a similar arrangement, and that vent line, with the branches arranged in the centre, obliterates all the small trap vents. That is allowable under the present law. Of course, as I said in the beginning, there are many things permissible under the present law of which the general public is not aware. But that was done at the suggestion of the master plumber. And thus we try to go along and better the conditions as we find them. The future does not look so bad but that we can get something better with all our efforts, something vastly better than it has been, at all events.

Omission of Main House Trap.

Mr. Putnam.—Mr. Craig's objection that the omission of the main house trap would at times allow steam to enter buildings and open the joints seems to me to have little weight to offset the heavy advantages of its omission, because the common lead-calked pipe joints used in houses to-day have already been so badly shaken up by the almost boiling hot water admitted to them in ordinary use, compressing the lead, which never expands again, that the rare admission of steam could hardly make matters worse. Nearly all such joints are already unsound, as the application of a pressure test generally shows. The joints have become dirt joints, but no longer lead joints. Moreover, settlement and shrinkage in the building materials are always at work on such rigid joints, which can only yield to pressure without cracking by opening the lead, and were it not that the warmth of the house and of the sewage and the admission of this very hot water and occasional steam usually created an inward current from the house into the soil pipe, instead of an outward current we should hear more from these poor joints than we do now.

With sewers ventilated, however, at every house drain, there would be no such thing as foul sewer gas to trouble the house owners in any case. Not only would the sewers be ideally ventilated, but the dust and germs in the outer air of the city would be filtered at the rate of 1,500,000 cubic feet per minute per square mile of city and at a saving of a half a million dollars per square mile of city in plumbing bills besides. To install all these traps at this enormous expense and at the sacrifice of the immense advantage in sewer ventilation we have pointed out, because of a fancied injury which the last few degrees of heat between boiling water and steam vapor would produce on an unscientific and foolish form of rigid pipe joint already distorted by building settlements and shrinkages, savors too much of straining at a gnat and swallowing a camel. If steam must be taken care of, there are several ways of providing against trouble from it better than the installation of main house traps, one being to condense the steam before entering the drainage system, another to carry up a special steam vent-pipe, and another to use a form of jointing unaffected by steam. Back venting and main house traps should be rigidly prohibited by law. Until this is done at least as rigid a standard test should be required to insure efficiency on the part of the back-vent system when allowed as is now required of antisiphon traps.

Chairman Johnson.—I take pleasure in introducing Mr. Coffey, the chief sanitary officer of Worcester.

Plumber Not to Blame.

Mr. Coffey.—I don't know that I can add anything to the sum total of the knowledge of this gathering, or say anything that will be of interest. I confess that I watched Mr. Putnam's slides and listened to his explanations with a great deal of amazement. His ideas seem to me, from my knowledge of the plumbing business, to be rather revolutionary. I know as a health officer that of late years sanitarians are becoming more and more impressed with the knowledge that filth per se has very little to do with the spread of contagious diseases. We are beginning, of course, more and more to come to the conclusion that contagious disease is spread more by direct contact than by any other agency. But—there is a but in the subject as yet—we are not fully convinced that that is absolutely true. And we are in a state of uncertainty regarding this plumbing question for instance.

It is true, as Mr. Craig said—and I listened with a great deal of interest to what he said—it is true that plumbers are not to blame for the condition of things, these fixtures and this aimless venting. The plumber simply did what he was forced to do by law, either by ordinance or by statute. And if those things Mr. Putnam has said here to-night are true, it seems to me that the subject is of sufficient importance, not only on account of the amount of money involved all over the State of Massachusetts every year in the introduction of these vent pipes and these traps, but also on account of its effect on the public health, to demand serious attention on the part of men qualified to deal with it and arrive at a practical solution. I think it would be an excellent thing if some body of men in the state, some body like the Society of Civil Engineers or the Association of Boards of Health, would see that a series of tests were made that would settle these questions; because as we are seeing here to-night, when the practical man on the one side and the theoretical man on the other side disagree, who shall decide?

Now, if this matter is capable of being standardized and correct results obtained from it, it seems to me that the subject is of importance enough for somebody to see that those things are done in order that we may stop the waste of money and the waste af time and thought that we are now lavishing on the plumbing of our houses.

House Trap With Frost Vent.

I was asked in the letter of invitation to speak to-night more particularly of the house trap, so called. In Worcester, until the ordinance we are now working under was passed in 1895, the house trap was not required in our plumbing ordinance. But when the ordinance of 1895 was adopted, that was included. And since then it has been the rule to insist on the house trap with the foot vent. Now, I know there are things to be said on both sides of this question. The object of the trap orginally was to put a gate between the household and the outside influences which are believed to be dangerous. Later knowledge, and, perhaps, better knowledge, has shown that that danger was exaggerated, and we are now under belief which is rapidly becoming universal, as I said before, that the danger from sewer air and from filth per se is not nearly so great as it was then thought to be.

But are we entirely free from danger from this sewer air? It is true, probably, as Professor Winslow has demonstrated, that sewer air in itself is not very largely impregnated with pathogenic organisms. But is it true that there are not certain individuals who may be susceptible to the injurious effects of sewer air? Or, rather, is it right that we should not take into consideration those individuals who are liable to injury by the breathing of sewer air? We know, of course, that certain people have a certain susceptibility to disease, that certain people are highly sensitive, that the old saw which says that one man's meat is another man's poison has a great deal of truth in it. And this sewer air that the laborer who is employed in the sewer seems to be able to breathe without any ill effects—isn't it a fact that while that may be true, the highly sensitive child or woman or man, who may be living in a house in which this sewer air is allowed to enter, may be injuriously affected by the breathing of it, even though it might carry with it none of the pathogenic germs that are so much dreaded?

One object of that house trap, as Mr. Craig pointed out, is to keep out the steam that is allowed to enter drains. It is a protection on that account. It keeps the steam out. Several times in Worcester we have had complaints from various sections of the city along this line. Some big manufacturers used large quantities of petroleum, and when they cleaned out their vats and turned the dregs into the sewer, where it united with the warm current of the sewage a highly volatile gas was produced that rapidly spread over the city and ascended on to the hills and entered the houses of the people. A great many complaints came in, and on investigation we found where the trouble came from and were able to stop it. But a trap on the house drain is a protection against such a thing as that. Of course it may be said that if those houses were thoroughly plumbed, and all the joints were thoroughly made, the offensive air would not get into the house. But that is another subject on which there may be a difference of opinion, because that gas may be forced through the seal of the trap. And, as Mr. Craig said, the joints ought to be tight, but, as a matter of fact, they are not tight at all times.

One Trap for Bowl and Bath.

Here is another reason for the house trap. Houses, of course, are built at various heights. The low building, with pipes going directly from the sewer up through the house, without any house trap, has a vent for the sewer. For some sewers are more offensive than others. In some sections, where there are tanneries and other large manufacturing plants, the sewage is more offensive than ordinary house sewage. A low house, with a pipe going through the roof alongside of a house somewhat higher, creates a condition where the sewer gas going through the top of the pipe of the lower house would blow into the windows of the house nearby that is higher. We have had complaints of that kind. Therefore, we have a rule in our ordinance that no soil pipe shall open within 15 feet of the window of a house nearby, but shall be carried up above that window. Even with a house trap we require that. And under our ordinance the bowl and the bath are trapped into one trap, which Mr. Putnam has recommended as a good thing. The traps are required to be back-vented, and the ordinance that is now pending in the city council—a new ordinance—has eliminated, as Mr. Craig has said the present Boston law does, the back-venting of the upper fixtures, depending on the soil pipe itself to furnish the air without back-venting.

I am not here to advocate that the house trap is essential. I recognize the fact that this whole question is, to say the least, in a debatable state, and my mind is open about it. There is much to be said in favor of venting sewers through the soil pipe, and it might be said, of course, that if that were done throughout the entire city the offensiveness of the sewer would be so diminished by the multiplicity of vents that it would be hardly noticeable in any one place. But again that may or may not be true. The currents of air in the sewers themselves and the currents of the outer air may so change the action of the vent pipes that they would not work in one locality when they would work freely in another. There is not any question that the sewers in themselves are highly offensive at times. A case came within my own personal observation within two weeks. At the foot of the street where I live there was a perforated manhole covering midway between the car tracks. At times that wasn't noticeable, but at other times it was highly offensive, so much so, indeed, that I went to the superintendent of sewers less than two weeks ago and told him he ought to change that for a closed cover. He did change it and since then I have not noticed any trouble. But when it was offensive it was highly offensive and there is not any question that sewer air is highly offensive at times and that currents of air moving in the sewers may have an effect. So that it is an open question whether or not vents all over the city would minimize it to such an extent that in any individual case it would not be noticeable. All of this leads me to the conclusion which I stated at first, that I think this question is so highly important, and involves so much in the matter of expense and so much that concerns our comfort if not our health, that some body of men competent to determine the matter ought to be appointed in some manner by some organization, or even by the state, which, it seems to me, ought to do it, because we have a state law regulating the business of plumbing, and under that law cities and towns have enacted ordinances which require large sums of money to be spent to carry out its terms. And the state, it seems to me, ought to appoint a commission of experts who would make a series of exhaustive tests and determine definitely and positively whether it is or is not necessary to back-vent the fixtures, and also whether or not a house trap on a system should be maintained.

To be Continued.

The under dog is entitled to sympathy—if he didn't start the fuss.

A good time to tackle an obstreperous buyer on a big deal is right after lunch.

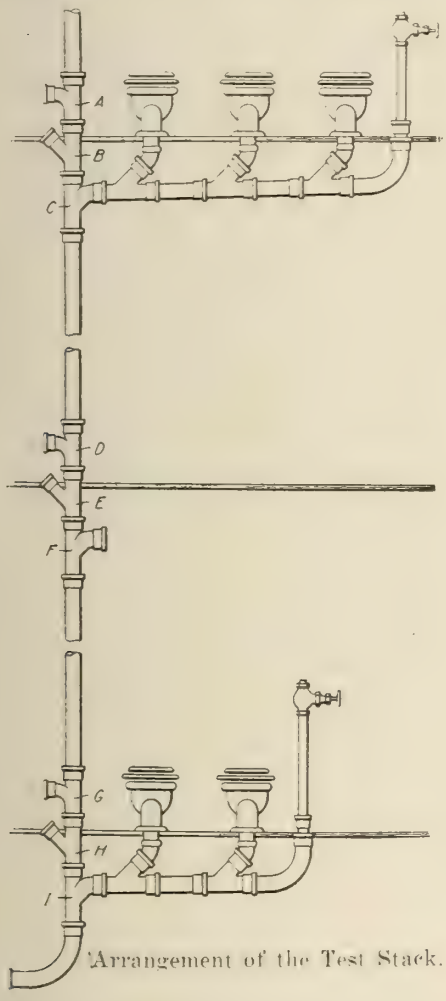
Enthusiasm is a superb quality of mind and should be cultivated by an ambitious salesman.

Don't be too ambitious to become the successor to your boss. The chances are he is holding his job strictly on his merits, and you may be doing the same thing by reason of his graciousness.

A salesman who knocks his own company to any one except his own manager is making a grave mistake. If you have any complants place them before your superior officer at a proper place and time.

INVESTIGATION OF HOUSE DRAINS.

There is need for more reliable information as to what actually occurs in the various pipes and fittings which go to make up the house drainage system when there are fixtures connected with it and the fixtures are used in unison, separately, closely following each other or under other conditions. This is the impression which was made upon the committee of tests of the American Society of Inspectors of Plumbing and Sanitary Engineers, which reported at the recent meeting in Trenton, N.J., that it would be best to start at the very beginning



Arrangement of the Test Stack.

and record exactly what transpires under all conditions before any attempt was made to test various fixtures used in every-day practice.

The committee members, working in conjunction with some of the government officials, constructed a test stack, arranged as shown in the accompanying sketch, from the Metal Worker, and has recommended that certain portions of it should be transparent in order that what is going on inside of it may be more readily seen. The committee recommends a series of experiments to be made on the stack erected or a similar stack using various combinations of fixtures with an open discharge, and with both closed and ventilated running traps, interposed with various lengths of horizontal soil pipe so that a horizontal line can be tested both partially and wholly obstructed, as would be the case in actual service when a big pressure from storm water reduces the available bore of the piping for the carrying away of the waste.

A number of other suggestions are presented in the report, and both the committee and the society would be glad to hear from students of the problem of the best arrangement of house drainage systems, on what has come under their observation; also about points which they would like to have investigated and made clear. Here is the opportunity for the master and journeyman plumber to send detailed information of things which have come under his notice affecting the disposal of household waste, and to present questions that have a bearing on the matter. Inasmuch as the test stack shown in the illustration herewith is located in Washington, D.C., where A. R. McGonegal, the chairman of the committee, resides, doubtless communications addressed to him will bring to the proper place the information which plumbers and others desire to contribute to help the society in its work.

REPORT OF SANITARY COMMITTEE.

At the recent convention of the Master Plumbers' Association of Ohio the sanitary committee reported in part as follows:

Sanitation is the handmaiden of progress and reform and its advancement should be eagerly sought by those who have the public welfare at heart, for in no line of work are the benefits so marked and the results so manifest from a commercial as well as a physical standpoint, as are those which are directed toward the sanitary condition of a people or a community. Sanitary improvement is one of the principal features of our business, and we should at all times endeavor to improve and, if possible, reach perfection.

At the present time every organization, whether social or business, is interested in matters pertaining to sanitation, and is using every effort to have modern sanitary appliances adopted, whereby the health of millions of people in this country can be protected.

No industry has made more rapid strides than the plumbing industry. If you will look back a few years and compare the plumbing conditions with those of to-day, you will note that they have been completely changed, due entirely to the master plumbers, who have urged sanitary appliances upon the municipalities throughout this great country.

There should be as much care taken in the installation of the water supply pipe as here is in the disposal of the waste water, as the greatest danger lies in the water we drink. We should advocate the use of practical water filters, especially in localities where the municipality does not filter or treat the water supply before delivering it to the people. We should discourage the use of plumbing fixtures where there is the slightest possibility of the water, after it has been discharged into the receptor, syphoning itself back into the supply pipe, thus contaminating the entire system of plumbing in that building.

FLEXIBLE METAL TUBING.

Flexible metal hose or tubing is made by winding a continuous strip of copper or galvanized steel so that it either overlaps itself or interlocks. During the winding, a packing of asbestos cord or some similar material is fed between the layers of the metal, thus rendering the hose pressure tight and giving it a flexibility even greater than that of rubber hose. Rubber-packed gas tubing is more generally employed for ironing in tailor shops, hat factories and for drop lights, where a very flexible tubing is required. As the surface of the packing exposed to the gas is very small, there is little chance of its being affected by it. Flexible metal tubing can be readily cut into any desired lengths with an ordinary back saw and is connected with rubber or metal ends.

While there are many places where metal hose will never replace rubber, it can be used wherever rubber hose can. For numerous purposes it would seem obviously superior. Steam, oil or gas do not affect it in the least, while any of these will destroy rubber very quickly. Unlike rubber hose, it does not kink. Connections can be attached to metal hose that will be tight for pressures up to several thousands of pounds, the couplings being attached to the outside of the hose and either packed on or soldered.

One of the chief advantages of flexible metal hose for any purpose is its great durability as compared with rubber hose. For this reason it is used for a wide variety of purposes where durability in hose is absolutely essential; for instance, in the operation of rock drills, pumps, air compressors, vacuum cleaners, power plants, etc. In one instance, flexible metal hose supplanted rubber hose in a large power plant. While the rubber hose was employed it was necessary to renew it every month. The same length of flexible metal hose, however, has now been employed for more than two years without showing any indication of the severe usage to which it is subjected.

Methods of Filtering Air for Use in Buildings

Extracts From the Report of a Committee on Air Washers Presented to the Recent Convention of the American Society of Heating and Ventilating Enginers.

With the wide use of fans for ventilation and the accompanying high air inlet velocities, quantities of dust and soot are pulled in and unless arrested and disposed of they reach and pollute the ventilated apartments. Almost every conceivable type of apparatus for removing the dirt has been tried. It is highly desirable also to purify the air by removing objectionable gases and odors. Dry filters of wire and cloth are in use. To be permanently effective they must be cleaned continuously or they merely hold up the impurities so that they may contaminate more air, and very soon become so clogged that the free area is curtailed.

A cleaner of this type is now on the market, and consists of a series of wire screens, over the inlet side of which hollow slotted suction arms under a considerable vacuum are constantly rotated. The vacuum is induced by means of a small centrifugal exhauster and the screens, thus kept free from clogging, are maintained at their highest efficiency. This type is very economical in operation, as it does not require any preliminary tempering coils, and the maintenance of the vacuum is a trifling expense. This cleaner does not affect the temperature or humidity of the air, and is therefore advantageous in many respects. It appears doubtful whether or not it will eliminate from the entering air all minute particles of dust, but has without question an efficiency high enough to justify its installation in many buildings.

Cheese Cloth Bags.

Cheese cloths bags in the air inlets to gravity indirect plants in even the residence sections of cities will often become black and so clogged that they become practically inoperative in twenty-four hours. However, if designed with ample free area, and changed every few hours, they are very effective in removing dirt and soot. The bag type seems to give the greatest free area in a given space of any cheese cloth cleaner. The bags should be made of inexpensive material and when removed should be burned.

There is a dry air cleaner on the market which is composed of a sheet or belt of moss special cloth, which is supported on zigzag frames and is so designed as to present a very large surface to the passage of air. The velocity through this substance must be very low and the space required renders it a difficult task to recommend its installation in ordinary cases, especially where air for ventilation is to be cleaned. This type is, however, especially adapted for filtering air used in manufacturing processes, on the suction inlets to air compressors, for cleaning the air used in cooling electrical machinery, or for cleaning the gas entering internal combustion engines. Notice is sure to be given, by greatly reduced air volume due to clogging, when this type requires cleaning. The thickness and mesh of the fabric are capable of considerable variation, to fit the special requirements of the installation.

Where expense of installation and maintenance is of no importance as compared with results, filters of cotton fibre loosely held within wire frames are in use. The air velocity is kept so low as to be almost imperceptible. The cotton is removed as it becomes soiled by an attendant whose time is practically fully occupied by this duty. Such an installation must have a very high efficiency.

Coke and Water Air Filters.

There are many types of air cleaners which use water. When water is used over a screen of sufficiently fine mesh for the screen to be effective, the water closes the interstices in the screen and reduces the free area. Coke has been used, being held in trays of wire, with water running over the whole. The pores of the coke soon become clogged, and the whole mass becomes slimy and unspeakably foul, when it is a tedious and expensive task to remove it and refill the trays with new material. This type of cleaner also produces considerable resistance to the flow of the air. Various other expedients have been tried, such as ropes of fibre running as endless belts through a pan of water, the air being drawn between the dripping ropes. With such type there is apparently not enough impinging area, and like the coke type, the maintenance cost is high.

Present Air Washers.

Gradually there has developed a type of cleaner in which the air is first drawn through a chamber in which it meets with a spray of water, then through a battery of baffle plates which are so arranged that little if any of the water can pass. Many of the devices and processes of this type of cleaner are covered by patents.

To a large extent, we believe the principle which makes one effective makes all more or less effective. The baffle plates may be vertical or horizontal, curved, angled or hooked, and in their construction lies the secret of the results attained. These water cleaners if they would be economical must have pumps to recirculate the water, as the large quantities used would be expensive if handled but once. If the cleaner is effective, or if there is enough dirt in the air to make it worth while to run the cleaner, this water must be frequently renewed. The cost of running the circulating pump is nominal. The process of securing an intimate contact between the air and water is very important, and there are many patented forms of spray heads and other devices for accomplishing this.

As at present manufactured by a number of firms, this water type of cleaner consists of:

First. A tempering coil, which raises the temperature of the incoming air above the freezing point, or steam coils which heat the circulating water to such an extent that it will not be frozen. It is always advisable that these heaters be automatically controlled.

Second. A spray chamber and tank built of copper, galvanized sheet iron or concrete. In this chamber are spray heads, perforated pipes, overflowing troughs or other devices for securing an intimate contact of the air with the circulating water. In some types the water merely falls from the ceilings; in others, is sprayed in thin sheets at right angles to the air current; in others, falls like rain over the edges of troughs at right angles to the air, or runs over coarse-meshed screens.

In some the spray heads open periodically and are automatically flushed out, and in others this flushing must be done manually from outside the chamber. In some, lamentably, it is necessary to shut down and go at each spray with a screwdriver. Others are so built that they cannot possibly clog. One device combines the spray chambers with a fan wheel, using centrifugal force for mixing air and water and finally for separating them.

Third. An eliminator, built generally of galvanized iron or of copper. This seems to operate on the same principle as most steam separators in that by sudden changes of direction the air passes on, but the particles of moisture and accompanying dirt impinge on the wet surfaces and drain to the tank through channels provided for the purpose. The shape, size and general design of this part of all air washers seem to be a crucial point. Part of this surface apparently should be passed by the air at high speed, so at to slap the particles of dirt against the wet plates. Part should be passed more slowly, so that as much of the moisture as possible may be deposited.

Porcelain Enameled Construction.

It seems not inappropriate here to in-

sert some suggestions made by a prominent engineer as to improvement in the water type of air cleaner, as regards both its manufacture and instalation. Nearly all the devices now made could be equipped to conform with these suggestions. The expense would be somewhat increased by porcelain enameled construction, but cleaning would be greatly facilitated, sanitary condition much improved, and everlasting construction attained.

1. Proper spray chambers, and eliminator chambers, with walls of material impervious to moisture, readily cleaned by hand, the surface to be similar to the vitreous material used for plumbing fixtures.

2. The eliminator vanes to be made of similar material and made easily removable for cleaning and repairs.

3. Each spray chamber to be provided with artificial lighting apparatus, so that the operator may observe the condition of the chamber.

4. The cleaning devices for spray nozzles to be arranged so as to operate from the outside of the washer as readily as the try-cocks of a boiler are operated.

5. The settling tanks containing the water in the bottom of the air washers to be made of the same material as the walls of the spray chambers, above described, so as to be easily flushed and cleaned.

6. Each manufacturer to furnish directions on a metal plate, indicating to the operator the several duties to be performed in order to care for the apparatus properly.

7. Manufacturers to furnish with every device a reliable dial thermometer (cost about $30), which will indicate the temperature of the spray chamber; also, a reliable dial thermometer which will indicate the temperature of the tempered air chamber, so that the operator can tell whether the automatic temperature control devices are maintaining the proper temperature in each respective chamber, without going into said chambers.

As the gentleman making these suggestions probably has installed as many air washers as any individual not a manufacturer of them, his suggestions should be given consideration.

Every eliminator baffle plate ought to be accessible for cleaning at every joint and crevice. At present apparently it is impossible thoroughly to scrub down the interior baffles of many makes. Some of the manufacturers have recognized this feature and provided easily removable baffles.

Humidity Control.

Perhaps one of the greatest fields of activity for water air cleaners or air washers is along the line of humidity control. We quote from a paper read before the Brooklyn Medical Society by H. M. Smith, M.D., and printed in the Metal Worker in 1905:

The prevailing practice of depending upon the thermometer as the sole guide in the heating of buildings is not only inadequate and unscientific, but is often misleading. It is not sufficient to know only the temperature if we desire either comfort or health, for the same temperature produces varying sensations of warmth or cold, depending upon the relative humidity at the time existing. It is unscientific and arbitrary to lay down a fixed temperature as a standard for living or sleeping rooms unless the relative humidity is indicated as well.

At New York and along the Atlantic coast the prevailing winds during cold periods are usually from the north or northwest, having passed over a dry, frozen area, which has presented little opportunity for the air to take up moisture. At such times the temperature of of air indoors is allowed to become as high as 76 to 78 deg. in order to feel comfortably warm. Records from steam-heated apartments show that the relative humidity was sometimes as low as 26 per cent., with a temperature of 78 deg., during a period of very cold weather in January, 1902. The high temperature is necessitated by the chilling of the body by the increased evaporation, evaporation being essentially a cooling process.

It is needless to say how unhygienic, as well as uncomfortable, is such a distortion of the proper relationship between temperature and relative humidity. By regulating the indoor relative humidity, we could keep our room temperature much more nearly stationary, irrespective of the temperature outside. But no improvements in indoor atmospheric conditions can be expected until heating engineers and the people they serve realize that with the ever-varying absolute humidity out of doors no system of heating can be made satisfactory if the indoor relative humidity is disregarded. Even thermostatic temperature control will not fill the requirements, for a constant temperature is constant in its effects only if accompanied by a constant relative humidity.

That we are wasting fuel is evident at once from the unnecessarily high temperature we maintain. The waste is probably greater than is generally supposed. W. M. Wilson, in a paper delivered at Milwaukee in 1898 at the convention of weather bureau officials, said that about 25 per cent. of the cost of heating is expended in raising the temperature from 60 to 70 deg., so if we can keep comfortable at a temperature of 65 deg. we shall have saved at least 12½ per cent. of the total cost of heating.

Some of these modern air washers, with the various devices attached governing the temperature and volume of air and water, are able to maintain, automatically, any desired reasonable relation between temperature and humidity, day by day, season by season, and their field of usefulness along this line is, we believe, just begun.

It is not uncommon to hear criticisms by persons interested, of the guarantees imposed in specifications for air washers. Therefore the following is suggested as being a form of guarantee probably not beyond the bounds of reason, and still one that will insure the owner a fair result for his investment.

a. The machine shall be of sufficient capacity when handling —— cu. ft. of air per minute, to remove not less than 98 per cent. of the solid matter entering the same.

b. To cool the incoming air when recirculating, that the outgoing water and air temperature differences will not be more than a percentage named and guaranteed by the manufacturer, of the incoming water and air temperature differences.

d. In winter automatically to control the absolute humidity of the air leaving the machine within one-half grain of moisture per cubic foot.

Size and Cost of Air Washers.

We have endeavored to compile some approximate data as to sizes and cost of the different types. This is of necessity approximate. Eight makers of air cleaners were interrogated. Five replied to part of the questions, while the rest refused to answer or feared to divulge trade secrets.

The questions were as follows:

"For quick use in estimating, the following information might be of value if the average of a large number of replies were used. If you will fill the following blank, an attempt will be made to tabulate the averages.

"For a standard air cleaner to be used, say, in a bank, and handling, say, 25,000 cu. ft. per minute. All replies are, of course, approximate."

1. Cubic feet of space occupied per 1,000 cu. ft. per minute handled? The answers were 16—22—17½—15 13½.

2. Square feet of floor space occupied per 1000 cu. ft per minute handled? The answers were 5.3—1.4—1.68—11—2—1.3.

3. Power consumed by pumps or machinery an integral part of apparatus per 1000 cu. ft. per minute handled? The answers were 0.06—0.1—0.05—0.075—0.2.

4. Weight of complete apparatus in running condition per 1000 cu. ft. per minute handled? The answers were 120—150—100—200—75.

5. Cost of apparatus installed in place, under ordinary conditions, per 1000 cu. ft. per minute handled? The answers were $25, $28.50, $24, $34, $40.

It is feared that these answers are too few to make up an average of much quality, and the conditions may be so varied that the answers are not dependable.

Labor Saving Suggestions for the Steamfitter

"Don Rex" in the Plumbers' Trade Journal Outlines Some Practical Devices Which Will Prove Time Savers — Advantage of Having Work Benches and Other Equipment Ready for Use When Each Job is Commenced.

"The boss says you are to go to Jno. Smith's and put up your vise and start the job." Does this sound familiar to you? Have you, when a journeyman, ever been hustled off to a building and when there been compelled to search for the material necessary to make a bench, or to find a suitable place to put up a vise? Of course you have and therefore you are aware of the amount of time lost and the makshift methods employed.

The steamfitter's bench is as essential as any tool used on the job, and several good benches should accordingly form a part of the equipment of every shop. A suitable one may be constructed at small expense, which will prove durable for years. From our notebook we shall illustrate and describe several knock-down benches and we regret the lack of information that makes it impossible for us to give credit to the designer of each.

Fig. 1 illustrates a folding wood bench easily constructed but very strong and rigid in use. Two 3-inch planks 10 or 12 inches wide (A) form the top. The legs (B) are made of 2 x 4-inch lumber planed on all sides and reinforced by iron straps (C) which may be made of 3 x ¼-inch iron. The frame for the top is composed of two 2 x 4-inch pieces (F) and two pieces of 2 x 8-inch plank (H), with two pieces of 2x8-inch plank forming the cross bars (I). The braces for the bench (E) consist of 2 x 4-inch lumber hinged at each end. Each is cut into two parts and hinged at G. Two flat iron straps (D) pass over top of bench, the bolts K forming a hinge.

As will be noted by examining the illustration, the bench is so hinged that the braces will fold up under the top and the legs up to the side of the top, making a compact, flat shape easily carried or transported, and one which without difficulty can be taken through an ordinary door or basement window.

Fig. 2 shows a detail of the hinged brace at top, and Fig. 3 a detail of the hinged brace at the bottom. The iron straps L are fastened across the ends of [illegible] in the form of the letter X to stiffen and strengthen it.

For those who prefer a bench with an iron frame, the design illustrated by Figs. 4 and 5 is about as convenient and substantial as any we have seen. Fig. 4 shows the legs folded up for transportation, while Fig. 5 gives a general view of the bench with the top fastened on the standard.

As will be noted by Fig. 4 the standard is made of six malleable tees and eight flanges, together with the necessary pipe and nipples. It may be constructed of 1-inch pipe if used for light work only, such as encountered in gas fitting or plumbing. If equipped for a steamfitter's bench it had better be constructed of 1¼-inch pipe. The top should be made of a single plank 2½ or 3 inches thick, fifteen to eighteen inches wide and about eight or ten feet in length. In order to insure that the bench will prove permanent and strong a plate of ¼-inch iron five or six inches wide and as long as the width of the top should be imbedded in the top immediately above the upper flanges and upon the standard near the ends of the bench, holes being made through the iron and plank to correspond with similar openings in the flanges. The top may then be bolted securely upon the standard. A plate with necessary holes for the attaching of the vise may also be placed at one end of the bench.

Time saved is money earned, and with such a bench as described in his possession, the fitter can have it set up and the vise in position in half an hour after reaching the work.

Another source of frequent annoyance to the man on the job and the cause also of the loss of much time is the provision of temporary hangers for use in supporting main while the plant is in course of erection. Who is there among the craft who has not at one time or another patiently (often impatiently) hunted for spikes or pieces of wire or rope with which to prepare such a support, or possibly has nailed together short pieces of boards in the form of a saddle? A lightweight but strong and serviceable hanger is that illustrated by Fig. 6. It is so light and occupies so small a space that

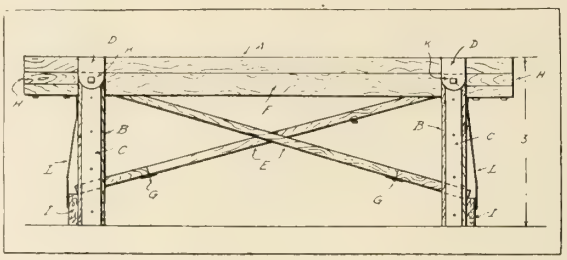


Fig. 1—Folding wooden steamfitter's bench easily constructed and rigid

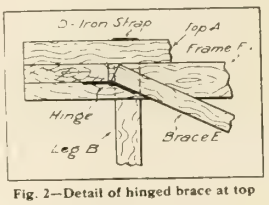


Fig. 2—Detail of hinged brace at top

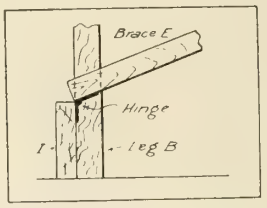


Fig. 3—Detail of hinged brace at bottom

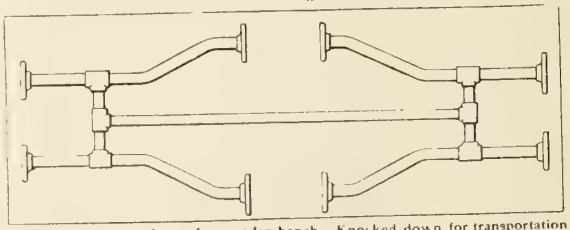


Fig. 4—Folding iron frame for wooden bench. Knocked down for transportation

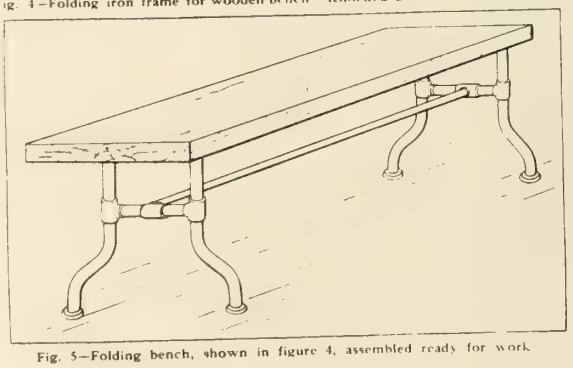


Fig. 5—Folding bench, shown in figure 4, assembled ready for work

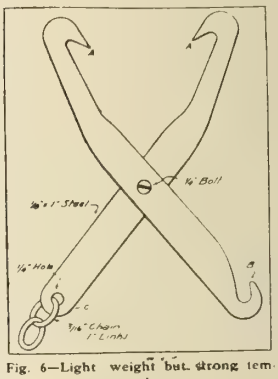


Fig. 6—Light weight but strong temporary hanger

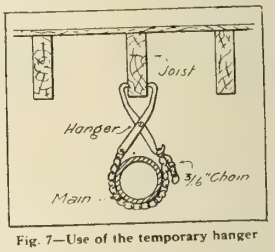


Fig. 7—Use of the temporary hanger

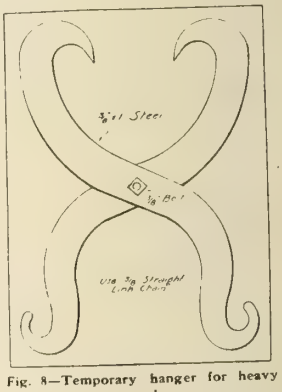


Fig. 8—Temporary hanger for heavy work

several of them may easily be carried in the chest with the tools. Note that the design is somewhat in the shape of a pair of ice tongs and made of two pieces of ⅛ x 1-inch steel, one end of which is turned over and pointed as shown at A. The bottom end of one strip (B) is made into the form of a hook, while the bottom end of the other (C) is rounded and has a ¼-inch hole bored through it into which is fastened a two-foot length of 3-16-inch chain having open or straight links about one inch long. This hanger hooks into a joist as shown by Fig. 7, with the result that the greater the weight suspended from it the tighter will be the grip upon the joist. When chain is unfastened a slight blow with a hammer or wrench against the bottom end will quickly release it from the joist.

A somewhat similar hanger for heavier work and one particularly useful when setting up or repairing a sectional boiler is shown by Fig 8. By fastening to the joists above the boiler and operating the chain properly, any part of the apparatus may be suspended or moved with ease and safety. This hanger, which is composed of two pieces of ⅜ x 1-inch steel screwed together with a ⅜-inch bolt will support a net ton or 2,000 pounds. The chain should be ⅜-inch with open links about 1¼ inches long and of a length sufficient for all possible sorts of usage. By reason of the fact that the chain may be hooked to either side of the hanger the surplus length is never in the way. Some of these hangers may be procured at an expense of a few dollars, and once tried will always be retained for continued service.

In these days of close competition, with the cost of skilled labor so high, it is of the utmost importance that we take advantage of the benefits obtained by the use of all labor and time-saving devices.

The Secret of Making the Business Pay

One Master Plumber Adopts the Plan of Being at the Shop Early Every Morning, of Visiting Each Job Every Day, and of Taking Care to See That all Material Required for Each Day's Work is on the Job Before the Day's Work Commences.

Written for The Plumber and Steamfitter by J. F. Brady.

Throughout this beautiful world of ours some people work the day, some work the night, and there are some who are working all the time, both day and night. It is an old but most truthful saying that "All work and no play makes Jack a dull boy," and so it is in the business world the same as it is with "Jack" being a dull boy.

There is a certain master plumber of my acquaintance who is hale and hearty—between fifty and sixty years of age—knows the business from A to Z—and his own best of all, who has I believed solved the secret of making the business pay.

The best journeymen like to work for this man, not that they can have an easy time with him for such is not the case—they must work—but most probably because he is good to his men and once each understands the other they work hand in hand to the benefit of both, the master plumber because he has a man who will accomplish more than an ordinary day's work in the usual time, and the journeyman because he has secured employment with a man for whom it is a pleasure to work: this master plumber knows how to diplomatically work with his men.

Half after seven is the starting hour and four o'clock the time at which the journeymen lay down their tools for a full day's work. The day for the master plumber is the starting and stopping time as set by himself alone, in the majority of cases depending on the amount of work on hand and the distance covered by the jobs about the city. If he has to foot it to some of them, it is probable that he allows himself more time; if he has a conveyance it is questionable if he won't sit about the shop and idly let the precious time go by until he thinks he had "better be moving" to "look the job over," in other words trusting to the men who have been placed on the work to carry it through and make it pay him the profit he has calculated to get out of the contract. These are not guess cases in the mind of the author of this short series of suggestions, but are actually facts which have come under the notice of his eye.

I know of a number of instances, which I feel should be cited in support of the above statement and as a comparison with what is to follow.

Where Profits Are Lost.

One master plumber I know of leaves 75 per cent. of the management of the entire business in the hands of his bookkeeper, who although he was a journeyman, is more competent in the other ends of business control; this master plumber is a thoroughly practical mechanic—except that he trusts his interests too much to the other man. In a group of men on the corner—in an office—or in the drinking house—there is occasionally found a master plumber, who has just dropped in for a "little chat": the little chat very often prolongs itself into an hour or two of time, which, while evidently pleasant to him and the others for the time being, was likewise time during which the men on his jobs may have been waiting for advice from him regarding their work, or time during which these men also were idly plying their work for him, because they knew of his propensity for talk and his unlikeliness to drop in on "them." This is a sad but true state of affairs with some shops, and in all cases not those run by the less prominent men in the business, for I know of at least six at first thought who are addicted to such practices.

It is no wonder that often is heard from men of this calibre that there is no "money in the plumbing business" any more—no probably not "anymore" for them.

Diplomacy is necessary in the plumbing business as much so as anywhere else—and it is proved by the statements made in the opening part of this article.

When the job is reached by the journeymen of this shop, they find on the job everything needed to carry them through the day or for a couple of days right there ready for them—they were not there the night before—no! This master plumber is a most practical man, and one who believes in making as much out of a job as there is to be made. Far be it from me to say that he is close, for he is not: his men are never forgotten at Christmas and other times during the year—a good bit of his profits go for charity—and to charity without any blow about it, and he is a man who has been known to take a journeyman or so home with him to lunch when a job happened to be close to his place of abode.

Visits Jobs Every Day.

This man lays out his work systematically—knows what each job is to need—knows the labor necessary to carry it through when there is no loafing, and to carry it successfully through he makes it a point to visit each job every day and note the extra material needed—if there is any needed, he has it there by the time it is needed.

My friend argues that more can be accomplished in the early mornings (especially in the spring, summer and early fall) than after the day has advanced, and he is at it before six of a morning and at half after seven when his men commence the day and he sits down to his breakfast he knows there is

little probability of any opportunity for lost time in securing material or data for a piece of work under contract with him. He does not track his men to see if they get there on the dot of 7.30 and quit on the dot of 4—he works with them in such a manner and reposes in them the confidence that is respected, and brings forth the best results. The moment the confidence is abused—he gets rid of the offender, and replaces him with someone else.

My readers may differ with me on some of the points advanced herewith on the management of the business, but I believe that if they seriously reflect upon the practical working out of the plan which I have outlined as one actually in use with most beneficent results, that they will realize the full benefit of the suggestions. Result from at least one suggestion is sufficient to repay the reading of my attempt to help along the business of the master plumber.

What Shall be Done with Sewage of Communities?

Folly of Polluting Rivers and Lakes — Privies and Cesspools Abominations — Sewage Can be Turned Into Profit if Used in Fertilizing Land

Written for The Plumber and Steamfitter by Charles H. Denison.

With the banding together of large numbers of people in what may be called permanent places of abode, a problem has arisen which is growing more serious day by day .

The cities, towns and villages of the western continent have grown rapidly in the past quarter of a century and a village which (speaking figuratively) in past days would have hunched up its shoulders and disdained the proposition, now simply feels its lack of class unless it has some kind of a sewer system, for good or bad.

After due consideration and many confabs, and a certain amount of "wire pulling" by "the powers that be," the village votes to put in a sewer system, and run the discharge where?

The where of it is many times easily (?) disposed of by shooting the sewage into some convenient small stream, river, lake or the ocean and ere long the "chickens begin to come home to roost," in the form of many different ills, such as the typhoid epidemics so recently prevalent in Montreal and Toronto.

At first thoughts, one would be inclined to believe that if the sewage were discharged into the ocean, it would have been disposed of in a most thorough manner for all time, but listen! there are the tides to be reckoned with; the direction of the wind and the shore currents, any of which, or all, may effect the return of that sewage and scatter it along the shore of the ocean for miles and miles, producing thereby mighty disagreeable conditions to say the least.

Sewage Turned Into Profit.

Nothwithstanding the fact that there are various other modes of disposing of the products of our sewers, many towns and cities have so installed their systems that they empty into nearby streams and lakes, thus possibly affording themselves relief at the expense of some other town or community, and, as has been proven in some instances, throwing away a valuable and constant source of income. Instead of an expense the sewer system or sewage, can be made a source of profit to the town or city, if rightly managed.

We have still with us in places all over the country, two abominations which should be suppressed, viz., the privy and the leaching cesspool. No man in his sober senses, after thinking the matter over could claim for these two objects as much sanitary safety as exists in the methods of the entire savage.

Indeed, of the two (from a sanitary standpoint at least) the methods of the savage are to be preferred, for the savage wanders about from pillar to post, while the cesspool and privy are located permanently.

I mentioned the two nuisances just given, not because they are directly connected with the subject as I have viewed it, but because of the effect they have upon the soil. Any one knows that the soil in the vicinity of these nuisances for many feet around is literally soaked full of foul matter. Not only that, but it may have leached down until it strikes some vein of water which it will contaminate. Now the idea is that earth can absorb just so much of this matter and no more. Sewage when applied to the soil must be so handled that the earth does not get an overdose, so to speak, or the same effect will result as in the privy or leaching cesspool.

Fertilizing Value of Sewage.

The sewage should be absorbed by the growing vegetation and only enough applied to meet the wants of same. There are many different ways in which this is done, but the point should be remembered that the soil must not be stuffed with sewage. Now, it is stated that in places where the sewage has been used if the products are cared for in the right manner, the vicinity is not rendered unpleasant, and from various plants which are in operation it would seem that this manner of disposing of the sewage came nearer solving the question, for large communities, as a unit, than the means generally used, viz., turning the sewage into rivers, lakes, etc. There is another phase of this question, however, which deserves notice and that is the disposal of the sewage in small towns, isolated plants and residences which may have no sewer at all and may be forced to use the cesspool. Now in such cases the sewage may be disposed of by the use of various systems which have been patented and can easily be obtained at a very moderate cost. In such systems the sewage does not come in contact with the ground and the sewage is destroyed by bacteria action, the discharge being clear water without any odor. This is a vast improvement on either the leaching or cemented cesspool which, in isolated plants, has been used so extensively all over the country.

It may be seen, from the brief description given, that, from being a source of danger, and a nuisance in many cases, the sewage of a community may be rendered useful, inasmuch as the town or city may own the land upon which the sewage is used and derive a profit from the sale of the crops which are raised there upon.

PROHIBIT POLLUTION OF WATER.

A bill is at present before the Canadian Senate, which if it becomes law will prohibit municipalities polluting navigable waters by sewage. Senator Belcourt who is fathering the measure, stated that the pollution of streams was a more serious menace to public health than the adulteration of food or drugs, yet there were statutes against adulteration, but none against pollution of water. To emphasize the danger he referred to the many cases of typhoid in Montreal, where five thousand cases had been treated at one time, and in Toronto, in both of which places the authorities attributed the outbreaks to impure water. In his opinion the pollution of water by sewage caused more deaths than did consumption. Forty years ago the Dominion Parliament had passed an act declaring it unlawful to throw sawdust or mill rubbish into a navigable stream or an unnavigable tributary of such. Senator Belcourt proposed to add offal and carcasses.

Questions and Answers in Heating and Plumbing

Inquiries Solicited From Readers, Who Run Across Problems Which are Unusual—Just as You are Interested in Reading the Questions Asked by Another Man in Your Trade, so Will the Other Fellow be interested in Your Problems — Send the Queries Along and We'll Answer Them—or try to.

WHAT TO DO FOR A LEAK.

Editor Plumber and Steamfitter.—What is the best dope, paste or cement to use to stop a leak? I have used white lead frequently, but it does not always do the work. Kindly answer soon in your department for this purpose and oblige,

STEADY READER.

St. Catharines, March 6.

There are several iron cements in the market which have at times been highly recommended for this purpose. It might be as well, however, if "Steady Reader" took pains enough on his work not to have any leaks. This can be nearly accomplished by using first-class dies, cutting good threads by the use of muscle and lard oil and making the fittings thoroughly. Should a leak then come, it can be stopped by caulking a little tin foil into the joint with a dull chisel and a hammer which is not too heavy. This will apply to either plumbing or heating jobs.—Editor.

STRINGING A STEAM MAIN.

Editor Plumber and Steamfitter,—I have always put in my steam and hot water mains by erecting temporary hangers and these are generally in the way. Perhaps you can suggest some other method as you are in a position to observe what may be mentioned in the craft. I should be glad to get any ideas from you through the columns of your Questions and Answers in an early issue.

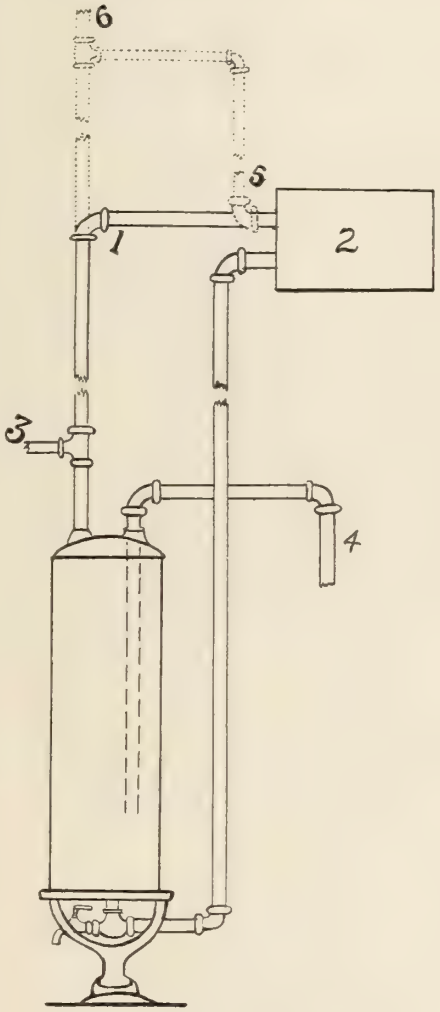
Regina, Sask., Feb. 28. J. C.

Well! We don't believe that we would use hangers of wood. It takes nearly as long to chase around and find them and nail them into place as it does to put up the main; and then they must all be torn down. Besides a pipe will not roll properly on such a hanger. If extra speed must be made to get a head of steam on in shortest time, regardless of any other considerations, we should drive a spike into side of beam, and on it hook a piece of baled hay wire about six feet long. This can be wrapped around the pipe several times and it will hold securely many times the weight of the pipe. In fact, before hangers became so numerous and of such excellent varieties as now exists, in some of the smaller places baled hay wire was used for hangers.

The best way, however, in the long run is to put up the regular pipe hangers first. Line out the job and put up all the hangers for the main before one single length of steam pipe is made fast.—Editor.

RANGE BOILER FAILS TO WORK.

Editor Plumber and Steamfitter.—Not long since I had a range boiler to fix. It was placed in the basement and almost



Range Boiler Fails to Work.

directly under the water front as shown in the drawing enclosed. The hot water supply to the house fixtures was taken out at figure 3, and the cold water entered the boiler at Figure 4. Of course the job did not heat and I fixed it in the following way: I pulled the pipe at 3 and put in a plug in the tee. Then I pulled out the ell at 1 and pipe from 1 to 5 and put on an ell at 5 looking up and made a high loop shown by the dotted lines. At point 6 I put on a tee and took off the hot water supply to the house and the job then worked all right. Thinking this might be of interest to your readers, I send it to you for the questions and answers.

St. John, N.B., March 7.

J. E. D.

INJUNCTION CONTINUED.

In the appeal case brought by the Standard Ideal Company, Port Hope, against a judgment of the Superior Court, Montreal, on the petition of the Standard Sanitary Manufacturing Co., Pittsburg, restraining the former company from using the word "Standard" in Quebec, the Court of Kings Bench, Quebec, confirmed the judgment with costs with the following amendment as explained by Judge Cross. It would seem to have been the intention of the trial judge not to restrain the appellant from using its name to carry on its business or from doing such an act as to publish a catalogue or price list with its name on the front of it. It would be well that the injunction should be made clearer in this respect. The respondent in its answer to plea expressly reserves its right to proceed against the appellant to stop it from using its charter name. No one can say now whether such a proceeding will succeed or fail. The matter of use of the name being thus left in an undetermined state the injunction should not in the meantime be left susceptible of being so construed as to stop the use of the full name for the carrying on of the business.

I would make the injunction somewhat more explicit by inserting, after the words "or otherwise" the words "in direct reference to particular articles of the said kind of wares," so as to give effect to the idea above expressed and make it clear that the appellant will not be stopped by the injunction from using its full name in business, however it may be affected hereafter in that respect by the suit which respondent has reserved its right to take. This is the unanimous judgment of the court.

The Standard Ideal Co. are considering carrying an appeal to the Supreme Court, and if this is decided upon the case will be heard in May.

F. W. Armstrong, formerly with the James Morrison Brass Mfg. Co., Toronto, and for several years with the Gurney Standard Metal Co., Edmonton, has assumed the management of Western Plumbing Supplies, Limited, Edmonton.

Gossip of the Plumbing and Heating Trade

Items Gathered in all Parts of Canada—Letters Invited From Subscribers, Giving Particulars Regarding Changes in Firm Names, Contracts Secured, Novel Methods of Advertising or Other News—Photos of Anyone or Anything Connected With the Trade Also Welcomed.

Marier & David, tinsmiths, Montreal, have dissolved.

Blouin & Jackson, tinsmiths, Quebec, have been registered.

W. H. Field, plumber, Toronto, is retiring from business.

Darrah & Holden, tinsmiths, West Brome, Que., have been registered.

W. E. Pallard, Fonthill, Ont., is advertising his tinsmith business for sale.

Bert Hamilton, of Hamilton & Stott, St. Thomas, spent a few days in Toronto last week.

H. W. Wilson is withdrawing from the firm of Wilson Bros. & Co., plumbers, St. Marys, Ont.

The Gurney Standard Metal Co., Calgary, have applied for change of name to Metals, Ltd.

Mrs. Holt, wife of J. M. Holt, master plumber, 601 Givens Street, Toronto, died on March 7.

The Western Radiator Co., Portage la Prairie, will employ over 40 people when their plant is completed.

The plumbers union at Winnipeg, will seek an improved agreement this spring to replace the one expiring May 3.

J. O. Brousseau, North Hatley, Que., is advertising his hardware, plumbing and tinsmithing business for sale.

Chas. Worrod, Tottenham, Ont., has sold his hardware store and tinware business to his son, A. P. Worrod.

A. Carmichael, master plumber, Edmonton, who has been in the east since December, was a visitor in Toronto last week.

C. Bergrud, plumber and tinsmith, Prince Albert, Sask., is putting in the lighting system in a hotel at Birch Hills, Sask.

J. B. Dore, who conducted a general plumbing and tinsmithing business at Montreal for the past twenty years, has gone to the West.

The contracts for the plumbing and heating of a residence for J. Earl Birks, at Montreal, has been awarded to John A. Gordon.

The residence of J. H. Fryer, manager of the Malleable Iron Works, at Galt, was burglarized a week ago and the place thoroughly ransacked.

The J. C. Shaw Hardware Co., of Wallaceburg, have added a tinsmithing and plumbing department in charge of T. F. Clark, formerly of Sarnia.

The matter of the appointment of a plumbing inspector at Kingston, is now in the hands of the board of works, but that committee has not yet considered applications, although several have been received.

Failing to get increases ol salary applied for, when the Vancouver civic authorities made many other increases, Plumbing Inspector R. A. Townley and Assistant Inspector Harpur, have handed in their resignationsf It is stated that they are going into partnership.

The heating, ventilating and power supply of the Montreal Technical School has been awarded to Tremblay & Francoeur at a price of $73,642. The contract calls for the instalation of 540 horse-power boilers, divided into three units comprising two Babcocks & Wilcox boilers, and one Belleville boiler.

Robt. J. Shannon's plumbing workshop at 1233 Queen Street West, Toronto, was damaged to the extent of $500 by fire and water on March 4. The premises were insured. Mr. Shannon will erect a solid brick workshop, and will instal a power pipe threading and cutting machine in the basement of the new shop.

The new building erected by Darling Bros., Montreal, close to their old works in order to relieve the congestion is now in occupation. The clerical staff have ornate and commodious offices, while the draughting office and the pattern rooms are also located here. The ground floor is used as a warehouse. The extra room thus afforded in the old building is given up to the machine shop.

The Canadian Wolverine Co., Chatham, Ont., are adding to their brass lines. A new closet combination will be introduced on the market this spring.

These will generate electricity for the dynamos and motors. The exhaust steam will be used for heating by means of two steam turbine pumps. A complete system of ventilation be means of hot air is provided.

Wm. Nicholl, gas fitter, employed by the Vancouver Gas Company, met with his death in Vancouver, owing to the alleged carelessness of carpenters who tapped a gas pipe in the attic of the Carlton hotel. When the gas was smelled, complaint was made and Nicholl was sent to make the repair. He was not missed until next morning, and plumbers working on the building following up the gas odor found Nicholl dead. He had been overcome by the gas, and it was evident had attempted to reach the air hole.

A new labor organization has been formed at Quebec, which includes the plumbers, steamfitters, gasfitters and helpers, both French and English speaking.

In consequence of the campaign carried on by the board of health at St. John to compel citizens to instal proper sanitary conveniences in their houses, the local plumbers are enjoying a great boom in business. Practically all the plumbers are piled up with orders and several have so many orders ahead that they are unable to accept any more work for the next few weeks. The board of health is compelling landlords to put modern closets in all the houses.

The C. A. Dunham Co., capitalized at $100,000, is a newly incorporated concern which has recently opened offices in the Continental Life building, at Toronto. It is the Canadian branch of the C. A. Dunham Co., Marshalltown, Iowa, manufacturers of vacuum heating and power plant specialties. Additional offices will be opened at Montreal and Winnipeg, and the factory will be located at Hamilton. The manager is R. N. Coats, until lately manager of the Dunham Engineering Co., Fort Worth, Texas. R. B. McKinnon, late of the Pease Foundry Co., is sales agent for Toronto.

Mr. Love, grand organizer for the journeymen plumbers, is in Vancouver, and an attempt will be made to have the employers sign up for a closed shop. In this, the local union has the support of the building trades council. As it now stands, union men are working in the same shop with non-union men, and now that the local is gaining strength an effort will be made to right this state of affairs. It is not improbable that some of the open shop owners may agree to be again unionized. There is no probability of a strike. The card system will not be acted upon, being voted down by a close majority. Business in plumbing just now is pretty good, many new houses and blocks going up all over the city.

Winnipeg Journeymen Plumbers' Local, No. 62, have been holding a series of business meetings and finally concluded to wind up their affairs and surrender their charter to the international union. This is the outcome of the failure to get the injunction case before the privy council in England. The Steamfitters, who were previously included in the Plumbers, Gas and Steamfitters and Steamfitters Helpers' union, have decided to organize a Steamfitters' union, to be autonomous and independent of the plumbers. Many journeymen plumbers who were never members of No. 62 on account of the uncertainty of its position, are intending to organize a Plumbers' union now that their field is clear and the other charter surrendered.

FAILING AMONG COMPETENT WORKMEN.

Ability to do a piece of work in a first-class manner is not the only qualification by which an employer judges his men. A case which very clearly brings out this point recently came to notice with a contractor who employs several first-class plumbers. He has two mechanics equally expert, and as they are both sober, industrious and in every way trustworthy, it can readily be seen they are naturally very valuable men. Their employer depends upon them to take charge of work and direct others when he is not on the job himself, which is the greater part of the time, as large contracts are taken at long distances from the shop. In speaking of the value of these two men the employer stated that there was no choice between them as far as the quality of their work was concerned; they worked equally hard, and one was as particular as the other to please customers and look after the employer's interests. But he pointed out a difference between these two men which sometimes causes considerable annoyance with one of them.

It seems that one of these mechanics when taking charge of a job, no matter how large or how far from home, asks for nothing but the materials and labor necessary to do the work, depending entirely upon himself to work out any problem that comes up during the progress of the work. If he runs short of any material he orders it from the nearest jobbing house without communicating with the home office. In a word, he takes hold of the job and puts it through without looking for assistance from any quarter. The other man, while equally capable, lacks the self-confidence necessary to do this. When in charge of a job some distance from home he is in constant communication with his employer. He shrinks from taking any responsibility whatever, and asks advice about things that he is perfectly competent to decide for himself. This lack of self-confidence is not only a source of annoyance, but it is also expensive. It frequently causes delay, and without good reasons, as the man has all the technical knowledge necessary to decide any question that comes up. In fact, he frequently asks for instructions about how to do a certain thing, and, when told, he will suggest a better way, which he has thought out himself, but has hesitated to adopt without being authorized to do so.

The fact that some men bear responsibility better than others is, no doubt, due in great part to temperament, but training will help the man who is not well fitted by nature to go it alone. If he forms the habit of depending upon himself he will find that it will increase his earning capacity. Every employer in the plumbing business finds enough detail to take his time without giving up any of it to some man who really needs no assistance. It would seem that the younger members of the trade might learn something from this description of the difference between two skilled workmen. Which is worth the more money to an employer and the more likely to succeed in business for himself?—Metal Worker.

NEW SANITARY DRINKING FOUNTAIN.

A new drinking fountain which the Board of Health installed recently in the department headquarters at Sixth Avenue and Fifty-fifth Street, New York City, has caused much talk among health authorities. Visitors of the Commissioner of Health have found at the left of his door as they enter a nickel-plated apparatus on top of a white porcelain stand which gives a new cup and a drink of ice-cooled water to those of the commissioner's guests who drop a penny in the slot.

The authorities for many years have been trying to get an alternative for the common cup for use in schools, parks and hospitals. They have succeeded in recent years in reducing the yearly death rate of the city from 25 to 18 per thousand by strict enforcement of the laws of hygiene yet they seemed helpless to prevent the spread of tuberculosis, diphtheria and other diseases through the park and school drinking cups. At the fountain the drinker gets as aseptic cup which can not be returned to the machine.

The inventor says he believes the public schools of the large cities are where the sanitary fountain is most needed.

The vendor is very simple to operate. The cup and water are delivered together at one operation. The purchaser deposits a penny in the slot and throws a lever to right as far as it will go and holds. The cup then drops into view and is filled automatically.

PLUMBERS PLAY HOCKEY.

Last July the baseball team of Noble & Rich, London, played with the picked team of the different travelers of the supply houses, with a score of 18 to 17 in favor of the plumbers. As they have also won fame in the hockey circles the Noble-Rich boys decided that they would again like to meet the travelers, and on Friday, Feb. 11, a fast game of hockey was played, resulting in a score of 1 to 0 at half time and 1 to 1 full time. Ten minutes was then granted to play off the tie, and in 5 minutes the travelers landed a goal making the score 2 to 1 in their favor.

After the game was over a banquet was tendered the players at the Tecumseh House, by Noble & Rich. When all had done ample justice to the good things, speeches were made and the gathering broke up in the wee sma' hours. The localites are of the opinion that Watts and Glenister mutually agreed upon the score made and they will be penalized in the next game to be played, they being accused of professionalism, having accepted the long green as old timers at this sport.

Watts and Glennister Arranging the Line up of the Hockey Team.

The Line-up.

Travelers.		Noble & Rich.
Fisher	Goal	Reardon
Jones	Point	Teale
Wilkinson	Cover	Pearse
Laidlaw	Rover	Pinch
Martin	Left	Rowan
McLaren	Right	Cox
Glenister	Centre	Watts

Referee—J. McColl.

New Buildings, Water and Sewerage Systems

Opportunities Offered by Municipalities and Private Enterprise for New Plumbing, Heating, Ventilating or Sanitary Systems—Work Being Undertaken in Every Section of the Dominion.

Municipal Undertakings.

Aldermere, B.C., will construct a waterworks plant.

Hutchinson Bros. were awarded the contract for hydrants at Victoria, at $44 each.

Ladner, B.C., south of Vancouver, is securing plans for a new water system, to cost $125,000.

Winnipeg will call for tenders for 2,500 feet of water pipe, also for 150 valves and 50 hydrants.

The council of Medicine Hat, Alta., will spend over $60,000 in extending the sewerage system.

City Engineer Childs, of Calgary, is preparing plans for a trunk sewer and septic tanks to cost $800,000.

The New Glasgow, N.S., city council is again considering plans for increased water supply at an estimated cost of $175,000.

The Robert Mitchell Co. have been awarded the contract for the supply of brass goods for the waterworks department at Winnipeg.

Sewers will be constructed on the following thoroughfares at Toronto: Lane, Hugo, Follis, Mavety, Boultbee, Beresford and Seymour avenues and Baxter street.

The Toronto Board of Control has accepted the tender of the Staveley Coal & Iron Co., Chesterfield, Eng., at $12,-479 for cast iron pipe and specials for the main drainage works.

The intake pipe through which Toronto's supply of drinking water comes from Lake Ontario is in danger of becoming choked with sand unless an addition to the pipe is made at an early date.

The following is a list of successful tenderers for supply of waterworks material at Saskatoon, Sask. Sewer pipe, American Sewer Pipe Co., Akron, Ohio; water meters, Neptune Meter Co., New York; iron pipe, Jas. Robertson Co., Toronto.

The lack of water and drainage for a number of the schools in the newly annexed districts of Toronto has been reported to City Engineer Rust. Mr. Rust says that drain connections will be put in as soon as sewers are constructed in these districts.

City Engineer Ker of Ottawa has prepared the following estimates: sewer main, $5,000; waterworks, old aqueduct, (renewing piers), $4,000; renewing old services, etc., $10,000; laying new services, $15,000; renewing and repairs to hydrants, $3,500.

The London board of works want $99,530 for this year's work. The amount includes a storm sewer, $8,000; exhibition buildings, $2,400; sewers and culverts, $4,500; 30-inch syphon pipe and overflow sewers, $10,000; and a storm water drain on Piccadilly street, $520.

Tenders were accepted by the Water Committee at Vancouver, for brass and water pipe fittings and upwards of 65,-000 feet of galvanized water pipe. The successful bidder in the former was Crane & Co., at $3,356.50, while A. J. Forsyth secured the latter at $2,622.50.

The Toronto Board of Control awarded the contract for the construction of the outfall sewer, in connection with the sewage disposal works to F. H. Dickenson, Hamilton, for $125,504. The Canada Foundry will supply the special castings needed in connection with the plant.

There was keen competition for the civic contract for the supply of brass goods and 65,000 feet of galvanized iron water pipe for the waterworks department at Vancouver. The Crane Co. was the successful tenderer in the former instance at $3,356.50, while A. J. Forsyth & Co. secured the latter at $2,622.50. Both are local firms.

The following contracts for sewers have been awarded by the Toronto city council: Algonquin Avenue, John F. Connolly, $687; Baker Street, John F. Connolly, $1,439; Breadalbane Street, Page & Britnell, $496; Clinton Avenue, John F. Connolly, $1,257; Duggan Avenue, John F. Connolly, $1,531; Garden Avenue, John F. Connolly, $1,697; Geoffrey Street, John Maguire, $948; Glendale Avenue, John Maguire, $1,054; Gordon Avenue, J. H. McKnight Construction Co., $199; Gormley Avenue, Page & Britnell, $2,000; High Park Boulevard, John F. Connolly, $1,435; Indian Road, John F. Connolly, $4,487; Keele Street, John F. Connolly, $6,787; Lawton Avenue, John F. Connolly, $3,582; Westminster Avenue, John F. Connolly, $1,124; Wright Avenue, John F. Connolly, $1,258.

Public Buildings.

A general hospital will be erected at Princeton, B.C.

A new general hospital will be erected at Smith's Falls.

Alterations will be made to the City Hall at Moose Jaw.

An isolation hospital will be erected near Grand Forks, B.C.

Wm. Morris will next season erect a new theatre at Toronto.

Methodists of Regina will establish a college to cost $250,000.

The Church of England will erect a new church at Oak Bay, B.C.

The alterations to the old post office at Winnipeg will cost $42,000.

Catholics of North Sydney, N.S., will erect a church to cost $18,397.

The Salvation Army, at Ottawa, has decided to build a rescue home.

Plans are under way for the erection of a new registry office at London.

The Presbyterians of Vancouver will erect a new church on Pender avenue.

The Blair, Ont., school board will install a new heating system in the school.

The reconstruction of Manitoba's legislative buildings will cost $400,000.

Bonar Presbyterian congregation will erect a new church at Toronto to cost $38,000.

An eight-roomed school and a four-roomed school will be erected at Flesherton, Ont.

An undenominational residential college will be erected at Moose Jaw, to cost $300,000.

The members of the English Church at Walkerton have decided to erect a new edifice.

C. P. Walker, of Winnipeg, will erect modern theatres at Winnipeg, Fort William and Saskatoon.

The board of hospital governors at Hamilton will erect a three-storey addition to the nurses' home.

Elkins & Norris, of Richford, Vt., were awarded the contract for the Catholic Church to be built at Bedford, Que.

W. S. Homan has secured the contract for the erection of a new four-room school with basement at Niagara Falls View.

The Hamilton Road Presbyterian Church, and King Street Presbyterian Church at London, will both erect new edifices.

Tenders are being called for the new $100,000 twelve-roomed school to be erected by the Edmonton Public School Board.

The Kossuth, Ont., school board are gathering information for a change in the heating and ventilating systems of the school there.

The Victoria Department of Public Works has awarded the contract for an eight-room school house to A. J. Prudhomme at $26,000.

The Brantford public school board will erect two four-room additions to the King Edward and Ryerson schools, at a cost, each, of $12,000.

The Brantford Separate school board is asking power to issue debentures for $20,000, for the erection of a new school, to accommodate pressing needs.

The Phoenix School Board is sending a largely signed petition to the provincial government asking for a grant of $10,000 towards building a new school.

Tenders for the plumbing, heating and electric wiring at the new isolation hospital at Toronto, will be received until March 8, by the Toronto Board of Control.

The plans for the police station and fire hall at Toronto, the former on Main St., the later on Howland Ave., are being prepared by the City Architect.

The following building estimates have been prepared by the Toronto Board of Education: Technical School, $100,000; Oakwood High School, $90,000; Frankland School, $60,000; additional to Humberside Avenue High School, $40,000; additions to Public Schools, $300,000; Manning Avenue School, $90,000. Total, $740,000.

Cutting Patterns in the Tin Shop

Readers of Plumber and Steamfitter are Requested to Make Use of this Department—Questions Regarding Patterns Will be Answered by Experts—Discussion is Also Invited on Any Matter pertaining to the Tin Shop.

CORRESPONDENT CORRECTS PATTERN.

Editor Plumber and Steamfitter,—I have watched with interest the articles on "Pattern drafting" in The Plumber and Steamfitter, but would like to draw attention to an error made in the article headed: "Square to Round Branch," by B. J. Reynolds, reproduced from the American Artizan as follows:

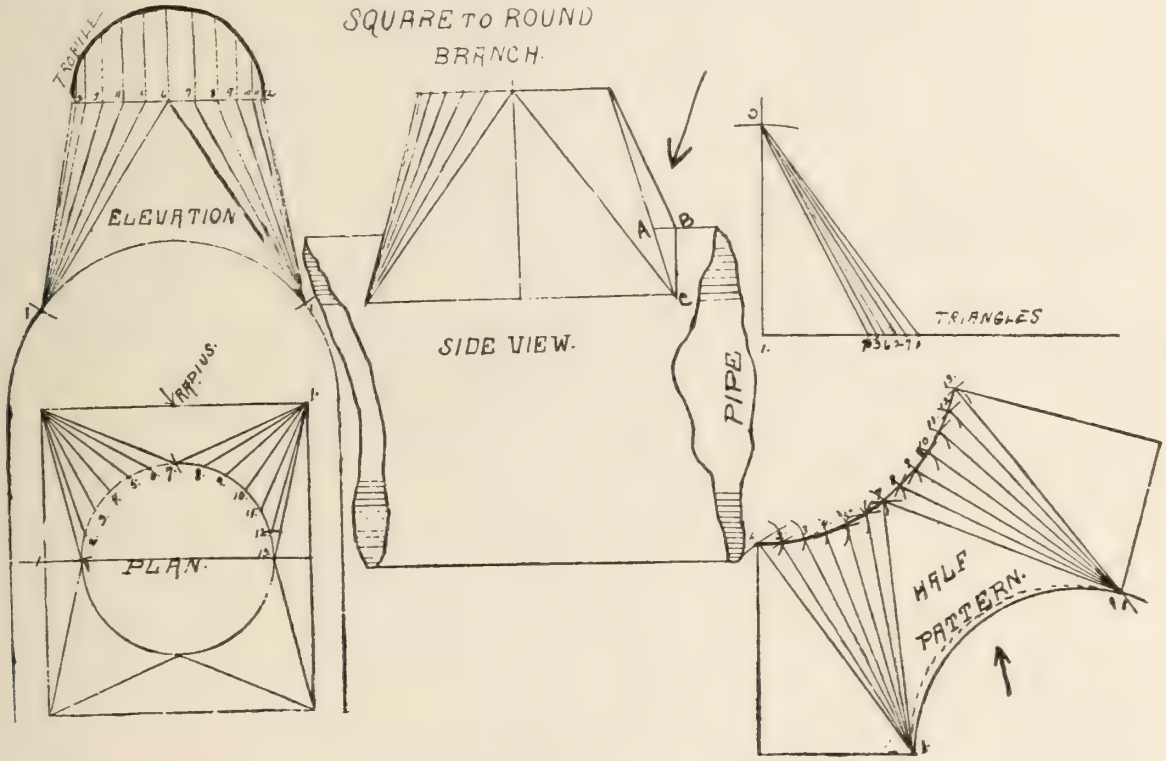
"To draw pattern for branch, first draw elevation, plan and side view. Divide half-circle of plan into twelve equal spaces. Connect lines from starting point, No. 1 in plan. The same method is applied to elevation. Draw all necessary lines to obtain profile, also half diameter of pipes. By placing dividers on plan, namely—1, slant heights are obtained, and 0—1 represents height desired, 1—2 from plan, 1—3, 4, 5, 6, 7 are placed on the profile line. These numbers on profile line, 1, 2, 3, 4, 5, 6, 7, are taken from heights in elevation. When all heights are drawn, develop the pattern as illustrated. Next draw hypotenuse, 1—1—1; then space 1—2 from profile, also 2—3, 3—4, 4—5, 5—6, etc. To obtain sweep of circle place dividers on radius and scribe from 1—1 on pattern, and continue on with the same method as applied in the above lines."

Mr. Reynolds' half pattern shows a perfect arc between the marks 1—1 and this is not correct as will be seen by a study of the sketch.

You will note I have marked A, B, C in order to explain the mistake. The distance from C to A is greater than the distance from C to B. My friend, B. J. R., will find a much more difficult problem to get a perfect pattern in this particular part than any other part of the work. The only way a perfect arc could be used is from a rectangle base on the square end of branch then the rectangle would intersect the main pipe at right angle. Even if the intersection were from C to B the pattern would not contain a perfect arc.

I have marked on the clipping dotted lines above the arc. What would be about the difference? This does not amount to much on an article of this size, but take actual size, say a 36 inch main, with a branch about 24 inches square, leading to an 18 inch round, then the difference would be too great. If you think it worth while placing this before your readers you may do so.

Tillsonburg, March 4. W. J. S



Pattern for Square to Round Branch-Arrows Shows Corrections Made by W. J. S.

PLUMBING TRADE PATENTS.

The following is a list of Canadian patents issued on Feb. 22, relating to Plumbers' and Steamfitters' appliances, and furnished by Fetherstonhaugh & Co., Ottawa.

123949. F. C. Doane and Fred E. Ceeder, Spokane, Washington, automatic pipe couplings.

123969. J. E. Ward, New York, hose couplings.

123983. E. W. Tuerk and R. G. Zahalan, New Liskeard, Ont., faucets.

124055. F. H. Pomeroy, Haverhill, Mass., gas lighters.

124131. C. M. Eckland, Oakland, Cal.; valve mechanisms for closet bowls.

124140. J. W. Guimont, Montreal; heaters.

124141. R. Gunton, Evansville, Ind.; closet seats.

124168. J. P. Morrison, Brantford; head rests for baths.

124174. J. McLaughlin, Toronto; measuring faucets.

124175. W. McWatters, Lindsay, Ont.; pipes.

124182. Gabrielle Pellant, wife of R. E. Leprochon, M.D., Montreal; bath attachments.

124191. J. H. Roper, Castle Gate, Nottingham, Eng.; baths.

124192. W. T. Rymer, Walnut Springs, Texas; float valves.

124198. W. Thomas, Vancouver; gas heating attachments for pipes of heating systems.

124199. B. O. Tilden, New York; flush tank operating mechanisms.

124208. Wm. R. Willetts, Waterbury, Conn.; flush valves.

PLUMBING AND HEATING MARKETS

MONTREAL.

March 14.—There is no check to the good tone that has been manifested for some weeks in the plumbing supply markets. Everything points to a great spring development. Orders now show gratifying improvement, and next month the rush will commence. The only drawback is the fear that a shortage will appear in some lines. Manufacturers in many instances are having hard work to keep up with the orders coming in now, and the question is, what will happen when the demand is at full pressure?

All lines show increased activity. Orders are coming in from a larger area, showing that all part of the country are feeling the spring movement. The absence of stocks generally in users' hands puts the markets in an extremely healthy condition.

Plumbers report good jobbing work, while it is anticipated that some large contracts will be offering as soon as the active building season opens. Reports from outside points drawing their supplies from Montreal and offering work to local shops are extremely favorable.

No important price change is announced, although owing to the firmness in the raw material markets quotations keep up at a high level.

Soil Pipe—The demand for soil pipe shows increased strength, and no let up in the pressure on the works is observable. Prospects are that soil pipe will be hard to obtain at the height of the season. We continue to quote light 60 off, and heavy 70.

Lead Pipe — Orders show better strength, supply houses being fully satisfied with the trade doing. Not only has the extent of the demand improved, but heavier bulk is wanted. No change in prices is noted, and we quote pipe and waste at 25 off, traps and bends at 50, caulking lead 5c per lb.

Solder—With lead pipe, solder is in better demand. Roofers are putting in heavier stocks preparatory to the coming call. No price changes are announced, and we quote half and half 20c, wiping 18½c.

Iron Pipe—The call shows a good improvement, and a heavy demand is anticipated at the opening of spring. Good orders are accumulating for the first boats. Prices are unchanged.

Radiators and Boilers—The lull which is usually noticeable at this time is absent and good orders are being taken for immediate, as well as future delivery.

A strong stimulation is expected next month. No price changes are announced, and we quote: Steam boilers, 60, and 5; hot water boilers, 50 and 10; wall and hat water radiators, 50 and 7½; steam radiators, 60, 7½ and 2½ per cent.

Scrap Market—An advanced is noticed in heavy copper and cast iron. Not much scrap is offering and business is on the quiet side except in cast iron. We quote: Heavy copper wire, 11½c; light copper bottoms, 10c; heavy red brass, 10c; heavy yellow brass, 8c; light brass, 6¼c; tea lead, 2½c; heavy lead, 2¾c; scrap zinc, 3c; cast iron, $16.

Metals—Tin had declined but there is no change in the other prices. Good business is reported, especially from outside points. We quote: Tin, 35c; copper, 14½c; imported lead, $3.75; domestic lead, $3.70.

TORONTO.

March 14.—The past two weeks have seen the plumbing markets quite a bit more active and trading a great deal stronger than any similar period since the commencement of the year. The first spring shipments went forward during this period and had the effect of brightening the whole business outlook. From now on we may expect to see the plumbing situation improving. April should bring out a good deal of roughing-in material and the following months the more finished lines.

Jobbing work continues to show steadiness—a fair number of old houses being remodelled with new plumbing, etc., since the cold weather has come to an end. Owners of these buildings are trying to get their places overhauled before the commencement of the building season. There are no price changes to report.

Enamelware—While plumbers are not yet demanding enamelware lines for immediate use, a large number of them are stocking away as many articles as they can conveniently carry, as they do not wish to repeat the experience of last year, when there was a shortage of these goods. Supply houses and manufacturers are better prepared, too, this year. Booking is above last year's record at this time. Prices are unchanged.

Soil Pipe—Contrary to expectations soil pipe prices have not gone back to the old figures, so the extra 10 per cent. stands, and is likely to do so until July. Light pipe is 60 and 10; and fittings, 70 and 10. Medium and extra heavy pipe are at 70 straight and 7 and 8-inch pipe, 40 per cent. Business is fair.

Lead Pipe—There is a stronger feeling to lead pipe conditions and trading is more even and satisfactory. Prices remain stationary. Pipe and waste are 25 per cent. off; caulking lead is 4¾c; and traps and bends are at 50 per cent. discount.

Solder—Graded solder still runs at the old quotations, and range from 17c to 18½c for wiping and 18½ to 20c for half-and-half bar. Trading is a great deal better since March came in, and is expected to be brisk all season. Stocks are high.

Iron Pipe and Fittings—Through the omission of a line in the last issue of Plumber and Steamfitter, there was an incorrect construction placed on iron pipe prices. The quotations are unchanged since the commencement of the year. Malleable fittings are 40 per cent. (some houses have a firmer price of 37½ per cent.); and cast iron at from 60 to 65 per cent. Standard bushings are 70; and malleable bushings, 65. Nipples are 75 and 10, though getting firmer; headers, 60; flanged unions, and malleable lipped unions, 65. Black pipe is yet at $4.70 for 1-inch, and the same size of galvanized pipe is $6.35 per hundred feet.

Brass Goods—The brass fixtures trade is somewhat better now than for two months past; and brass work is exceedingly active. Prices are unchanged. High grade compression is at 60 per cent.; medium, 65; and standard, 70. Fuller work is at 70 per cent. Quotations are more steady now since the recent understanding.

Boilers and Radiators—The selling season is opening up and manufacturers anticipate to be constantly employed right up to November with installing heating systems. Quotations remain at the old figures. Hot water boilers and radiators are at 50 and 10; and steam radiators, 50, 10 and 2½ off.

Metals—Quotations are unchanged. While trading is more active, prices are tending easier, the opinion being general that a number of advances at the opening of 1910 having been too radical. Tin is 35c; copper, 14 to 14¼c; lead, $3.85 (imported), and $3.75 (domestic). Old metals: Iron, 8c to 11c; lead, 3c; zinc, 4c; copper, 9c to 11c.

W. J. Cluff, who for several years has been associated with Cluff Bros. and the King Radiator Co., Toronto, is now devoting his energies to the affairs of the Canada Iron Pipe Co., 59 Lombard St., Toronto.

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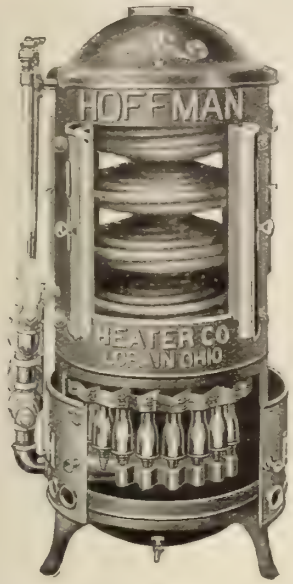

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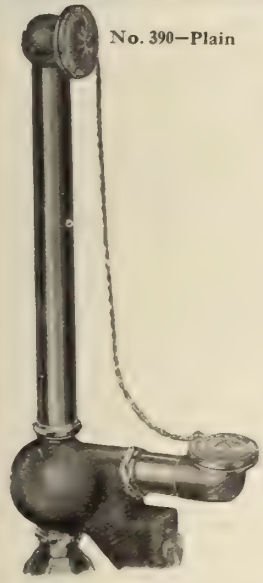
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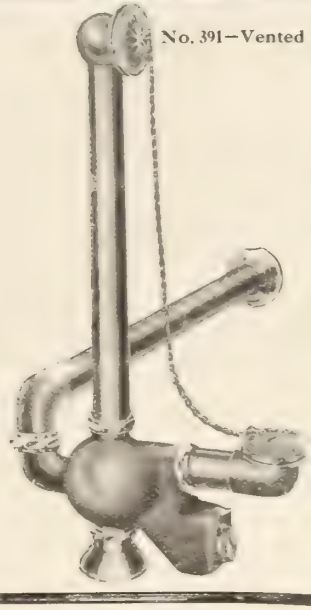
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$75 buys the best duplicating machine on the market. ACME will print anything a job printer can do. Complete outfit: Acme Duplicating Machine, one tubular stand fitted with type cases, one drawer for accessories and forms, 20 lb font of typewriter type, one chase, one Acme ribbon any color with typewriter ribbon to match, one pair tweezers, two quoins, one key, one oil can, and one set of regleta. Sold with a guarantee. Acme Duplicator Co., Baltimore, Md., U.S.A. (tf)

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Blue Print Patterns

For Sheet Metal Work

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DIRECTORY OF MANUFACTURERS

Plumber and Steamfitter receives, from time to time, enquiries for the names of manufacturers of various lines. These enquiries come from firms who usually intimate they have looked through Plumber and Stamfitter but cannot find any firm advertising the line in question. In many cases these firms are anxious to secure the information at once. This page enables manufacturers to keep constantly before the trade lines which it would not pay to advertise in larger space.

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Gasoline Combination Blow Torches
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Anti-Splash Tap Filters
The "Galvo" Filter and Water Steriliser

There's good money in them for hardware dealers. We supply display cards that sell them.

Write for Prices and Sample.

The Anti-Splash Filter Co.
OWEN SOUND - - ONTARIO

Will Hold Up a Shelf

That's what a shelf bracket's for. For this purpose there can be NOTHING BETTER, NOTHING CHEAPER than the BRADLEY STEEL BRACKET. It is well Japanned, Strong and Light. The saving on freight is a good profit aside from the lower price at which the goods are sold. Order direct or through your jobbers

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GENUINE
Armstrong Stocks and Dies
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Catalogue on request.

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OURS NEVER FAIL

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"Kerr" Radiator Valves

on your heating work, and your valve troubles are over.

We charge the price and furnish the reliable goods

The

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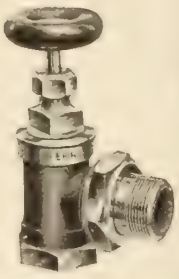
Look for Our Name "KERR" on All Genuine KERR VALVES



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FROM YOUR JOBBER

YOU WILL GET BETTER RESULTS, MAKE MORE PROFIT AND HAVE SATISFIED CUSTOMERS.

TRY THEM OTHERS FIND IT SO

DART JOINTS NEVER LEAK, MAKE THE JOINT QUICKER AND EASIER AND ARE ALWAYS SERVICEABLE.

DART UNION CO., Ltd., TORONTO

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PLUMBERS

WRITE US ABOUT OUR

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Write for our latest Plumbers' List and Quotations

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PRACTICAL WRINKLES FOR THE PLUMBER

A collection of 265 handy methods and devices in Plumbing work pertaining to such subjects as,—Getting the Length of Offsets, Making Pipe Hangers, Connecting Expansion Bolts, Making Joints, Protecting Pipes from Freezing, Cutting Holes through Brick and Concrete Walls, Connecting Boilers, Bending Pipe, Using Plaster of Paris, Discovering Leaks, Determining Size of Pipes, Soldering and Brazing. These wrinkles will effect a great saving of time in connection with the mechanical part of plumbing practice, constructive and repair work.

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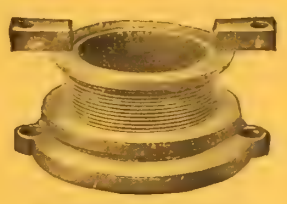
No. 21 BEAVER DIE STOCK

Equipped With Universal Chuck



Showing Detachable Leader Screw and Ring

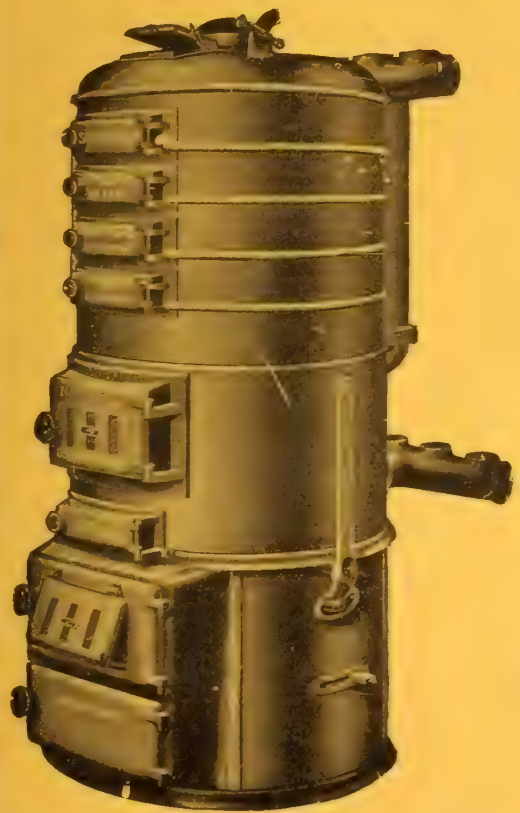
Number 21 "Beaver" cuts 1-in., 1¼-in., 1½-in., 2-in. pipe. One boy can successfully operate this tool.

It is our old No. 2 greatly improved, threading from 1 to 2-inch pipe without changing dies. It has a new centering device for fastening the stock to the four sizes of pipe. Does away with all bushings. The rear opening is large enough to take in a 2-inch coupling for threading short nipples. The parts subject to wear are detachable and may be replaced at slight cost.

30 DAYS' FREE TRIAL OFFER

To prove our claim that "Beaver" Die Stocks are the *cheapest*, *most accurate* and *fastest Pipe-Threading Tools* on the market, we will send one on 30 days' free trial. If it does not give you better, quicker service than any Die Stock you ever saw before—send it back at our expense. This is a genuine offer—it costs you nothing to investigate.

Borden - Canadian Company, 66 Richmond Street East Toronto, Ont.



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"SOVEREIGN" BOILER

The boiler with the many exclusive features. Our booklet tells you all about them—We have no time to go into them all here. But just to mention one of them—THE SIZE OF THE FIRST WATER SECTION (one-third larger than any other section). It is directly over the fire and in the path of the most intense heat, and being so large, there is no chance of water resting in it till it boils—a most important item.

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Plate F
199

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Dimensions Lavatory 18 x 21" Oval Bowl 11" x 14" Back 8"

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We are also manufacturers of full lines of Bath Tubs, Shower Baths, Lavatories, Sinks, Laundry Trays, Wash Sinks, Range Closets, and Urinals, etc., etc.

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Vol. IV, No. 4 (New Series). Publication Office : TORONTO, APRIL 1, 1910. Old Series, Vol. XXII. No. 7

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"VIKING"

For Water or Steam

For ECONOMY in fuel consumption ;

For EFFICIENCY in operation ; and

For DURABILITY of wearing parts, the

"VIKING"

Low Pressure Boiler

has no superior and very few equals. It will pay you handsomely to recommend and install the "Viking." As a mechanic you will appreciate its construction.

Each Boiler is erected and tested prior to shipment, and is **absolutely guaranteed !**

The "Viking" can be used **for water** or **for steam,** and is especially suited for apartment houses, factories, large stores, etc.

LET US HAVE YOUR ENQUIRIES

MADE BY

WARDEN KING

MONTREAL LIMITED

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Beaver Brand

Cast Iron Enamel Ware

Famed for its Smoothness, Colour and Wear

This Cut Illustrates Our

Beaver Brand Roll Rim Sink

This is one of our leading and best known lines, which has given satisfaction throughout the Dominion. Our new and up-to-date plant is unrivalled for the production of Bath Tubs, Slop Sinks, Kitchen Sinks, Laundry Tubs, Lavatories, Closets, etc. Customers can rely on having their orders promptly filled. Every article of "BEAVER BRAND" manufacture is guaranteed.

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All Jobbing Houses	All Jobbing Houses	A. O. Campbell	Crane & Co.

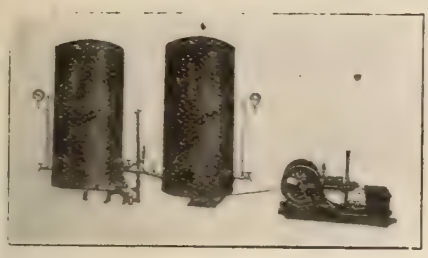
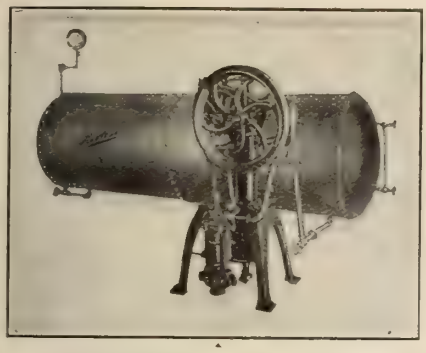


FIG. 130-B

System for hard and soft water, operated by hand or power, two 315-gallon tanks, with full equipment, complete as shown.

Price, $322.00, less your discount

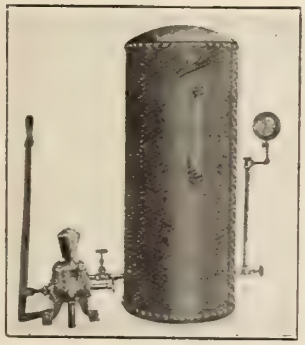


Our "ECONOMY" HOT-AIR ENGINE

will give you any pressure you may require and is more efficient and economic althan any other Hot-air Engine on the market.

The prices will please you

It Will Pay You to have our Catalogue and Price List ! Can't we send it to you ?



Hand Power System. 220-gal. tank, complete as shown, **$94.50, less your discount**

Peerless WATER SERVICE SYSTEMS

National Equipment Co.

21-27 Lombard St, TORONTO

WE ALSO SELL

Hot Water Storage Tanks, Automatic Thermostatic Valves, Pumps of all kinds, Gasoline Engines, Electro Motors, Quinn Automatic Valves, Acme Air Washers, Paul Steam Systems.

Write us for Special Equipment

The Empire Low-Down Closet

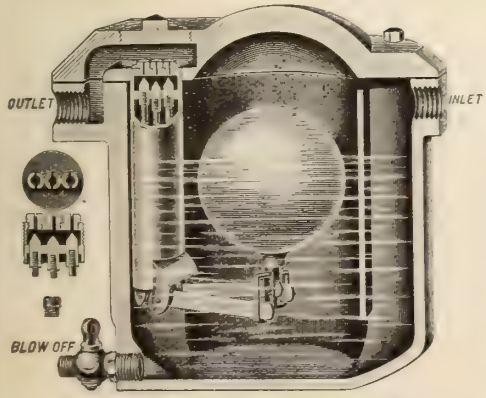
is the most reliable closet on the market. The FITTINGS are made of the BEST materials and are GUARANTEED.

THE WOODWORK IS GUARANTEED AGAINST SPLITTING

DOWELS are used in all the joints in our TANKS end SEATS. We are the ONLY manufacturers who use or CAN use this process. Ask the jobbers who sell our closet or the plumber who uses them if they are not the BEST. Sold from coast to coast. Samples of woodwork showing this joint will be sent for the asking.

EMPIRE MANUFACTURING COMPANY, LIMITED, :: LONDON, ONT.

Canada's Largest Brass Factory



For Pressures up to 250 lbs.

WRIGHT "EMERGENCY"

High Pressure Continual Flow

STEAM TRAP

The "Emergency" trap drains the water from steam systems automatically and continually without steam waste and regardless of small flow or flood.

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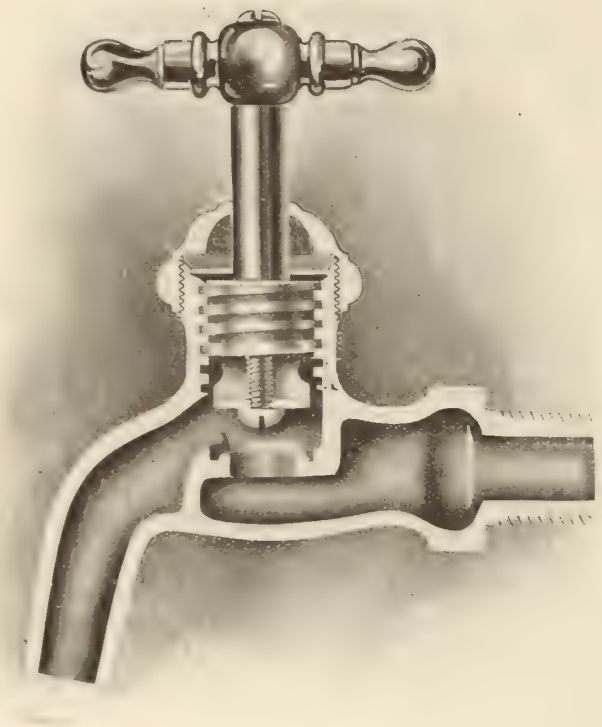
DARLING BROTHERS, LIMITED

TORONTO **15 Ottawa St., MONTREAL** **WINNIPEG**

Have You Had Trouble With Compression Work?



"Canadian" Quality Compression work, illustrated above, will relieve you of all your **trouble** in that respect with absolutely **no cost** to you.

Every piece bears our name, is thoroughly tested and

Unconditionally Guaranteed

"They are made to stand it."

Catalogue and prices on application.

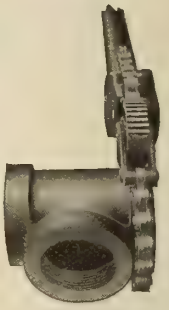
Canadian Brass Co.

Limited

GALT, - - ONTARIO

"AGRIPPA"

A Labor Saver



because it overcomes loss of time in quarters where the broader-jaw tools are cumbersome. Is it wise to impose upon a pen-knife the duty of a screw-driver? Likewise in argument we favor "Agrippas;" there should be another tool in the "kit" if it does lots of things with greater facility. Flanges, short-nipples, right and left hand fittings and innumerable "cramped" places in pipe fitting offer a few reasons for assertion that "Agrippas" are **Tools for Economy.** Discount from dealers. Details from—

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Messrs.

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& Co.,

Superior Drop Forgings

35 RICHARDS ST.

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Quality THE CROWN Talks!

When you see the "Crown" Trade Mark on *laundry goods*, you will know you that are dealing with an article in which QUALITY is the pre-eminent feature. We spare no pains in the selection of materials, skill in making and care in finishing "CROWN" goods, and the result is an article second to none on the market.

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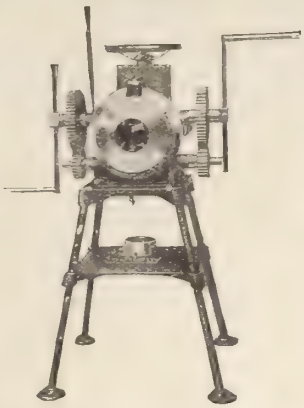

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completely covers the needs of the plumbing and heating contractor in pipe threading.

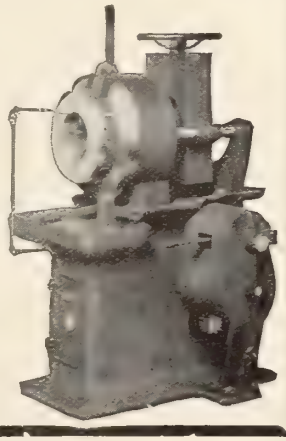
Its usefulness in this field is of the widest, and the returns from the money invested will soon exceed he original amount.

Let us tell you just what the Loew Victor will do for you

Write.....

The Loew Manufacturing Co.
CLEVELAND, OHIO

Agents for Ontario and Western Canada, The General Supply Co., Ltd., 219 Bank St., Ottawa, Ont.



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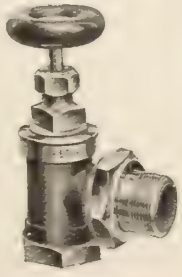
"Kerr" Radiator Valves

on your heating work, and your valve troubles are over.

We charge the price and furnish the reliable goods

The **Kerr Engine Co., Limited**

Look for Our Name "KERR" on All Genuine KERR VALVES



Walkerville - Ontario

LOOKING FOR SOMETHING GOOD IN PIPE JOINTS?

EVER TRY

DART UNIONS?

HUNDREDS OF USERS PRONOUNCE THEM TO BE THE REAL THING. THEY DO ALL THAT A UNION CAN, AND DO IT AT THE MINIMUM OF EXPENSE.

THE NAME IS CAST ON EVERY ONE, AND YOUR DEALER WILL SUPPLY YOU.

DART UNION CO., Ltd., TORONTO
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Plumber and Steamfitter

and Sanitary Engineer of Canada

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Circulating amongst Plumbers, Steam., Hot Water and Gas Fitters, Sanitary Inspectors, Heating and Ventilating Engineers, City Engineers, Boards of Health, Architects, etc.

TORONTO, APRIL 1, 1910

REFUSE TO CUT PRICES.

A great opportunity is afforded plumbers generally this spring to do something to lessen the absurd price-cutting that is having such a disastrous effect upon the industry. From all indications plenty of work will be offering, and a better chance to make a stand on the question could not be afforded.

It is impossible, as things are at present, to stop the over-crowding of plumbers' shops that is now going on, but it is possible for reputable masters to refuse to be drawn any further into the vortex of price-cutting. They have been paying the penalty of their weakness in the past. If they had refused in the first place to cut in with every man who chose to set up for himself, and had taken a firmer stand on quality of work, rather than on price, the situation would to-day be much better than it is.

But it is not too late to improve the position of affairs. With the spread of knowledge as to the absolute necessity of having perfect plumbing, that is if the health of the household, the office staff, or whatever the case may be, is to be safeguarded. Landlords are recognizing that the utmost care must be taken in the sanitary arrangements. It is, therefore, growing more easy every year for plumbers to talk the question of good material and good work as against cut prices.

If a customer comes into the shop and states that So-and-So offers to do a job at a price underneath yours, thereby hoping that he can start a little competition among the two shops, refuse to abate the price. Point out that the plumber must live and, therefore, he must make a profit somehow. If the price is cut, then the material and the work have to suffer for it. If the customer does not admit of the strength of the argument, let him take his job to the other man. Better refuse a job than take one which does not pay. Being a reputable plumber, you cannot make up on poor material and bad workmanship. Therefore, you lose on the transaction. Better have the shop less busy than crammed full of work that is not paying.

But our contention is that a lot of price-cutting is done unnecessarily. A customer makes a bluff that he has a lower price from another plumber, relying upon the fact that you will be afraid to call it, which is very often the case. If a plumber has a good name it carries great weight with the average customer, and it will do more so as time goes on. It is therefore essential that every man should do the utmost to improve his standing in his community. It is the man with the reputation who will command the trade in the future, and not the man with the cut price. If the plumber, therefore, lends himself to price-cutting, he loses the prestige which will serve him in good stead later on. A recognized price-cutter does not stand well in the eyes of his customers, even though he meets their wishes. There is always a doubt of the man who is willing to cut his price.

Therefore, plumbers should stand out this season for a fair price. There is plenty of work coming along to stiffen their position. Stand for quality of workmanship and good material, and you are bound to win in the long run.

A MODEL SCHOOLHOUSE.

As indicating the attention which is being given to schoolhouse construction and the thought given to the health and comfort of the pupils, it is interesting to note the movement at present under way to erect in the City of Chicago a school building which will be a model in its way.

The feature of the school will be a bathroom, kitchen, dining room, ventilated cloak rooms, manual training benches in every class room and emergency exits for all rooms. The "typical classroom," as it is called, will be 22 x 33 ft. in size, and will have seats for 40 pupils. Each child will have an additional square foot of space and 10 cu. ft. of air more than is available for the child of the average classroom now constructed. The seats will be in five rows of eight each, and two sides of the room will have manual training benches with accommodations for 20 pupils at one time. The idea is to have one class of pupils reciting, while another 20 pupils is working at the mannual training benches. The cloak room will extend along the entire length of another side of the room, with sufficient vertically sliding doors thereto, so that all the pupils may get in the cloak room in 15 sec. The blackboard of each room will be of slate and in one piece.

The ventilating apparatus will be so constructed that the air will be forced into the room near the ceiling and forced out near the door, passing through the wraps of the pupils, so that they will receive a thorough airing. Every room will have emergency exits, with automatic locks, opening into the fire escape, or onto the ground, according to the location of the room.

The plans which have been drawn for this model school building call for a fireproof construction, the floor and wall beams being of steel with fire brick between.

BAD SANITARY CONDITIONS ON FARMS.

Plumbers in Canadian towns have an excellent opportunity to develop a lot of profitable business by using part of their advertising space in the local paper to point out the need of better sanitation, and how conditions can be improved. Their practiced eyes ought to bring to light many things which ought to be remedied and following the opportunity up, business should result. Then photographs or descriptions of how Farmer Jones has improved his sanitary equipment will, if published, in the local paper, please Farmer Jones, and encourage other farmers to get abreast of the times.

That there is plenty of scope for the activity of plumbers in the farming districts is illustrated by the following letter written by a Barrie (Ont.), pump-maker:

> I am a pump-maker here, and my experience is that the most of our diseases come from rotten, filthy wells, or filth holes not fit for man or beast to drink out of, and some of them are so bad with toads and the effluent of barnyards that I would not fix the pump. I said to one man that I supposed he would clean the well out, and his reply was that it was only for the stock.
>
> In Manitoba I saw men take a plow with horses and scraper and gouge out a hole in the ground about seven feet on the prairie for the stock to get water, one of the most horrid things on earth. In a short time it would be a filth hole.
>
> I would suggest that the Government should appoint wise men to look after the wells and water supply for man and beast, for health depends upon it. If a cow eats leeks she will give leeky milk and butter, and in Manitoba if a cow eats much French weed you could not drink the milk or eat the butter, and if fattening cattle eat it it spoils the beef.
>
> GEORGE MANEAR.

Barrie, March 21.

Toronto is said to have even poorer milk than Montreal, Chicago or New York, with a larger mortality among infants than these larger cities and during the past week charitably disposed people opened a milk depot to supply poor mothers with certified milk at reasonable prices. Next fall the farmers in the district surrounding Toronto will be forced by the Government to clean up their premises. Here is a chance for a progressive Toronto plumber to get a list of the farmers supplying milk to the dairies, and point out to them the advisability of equipping their premises with a modern water system with pressure from an underground tank connected with a hot air or gasolene engine.

The milk can and the pump handle are generally understood to have an intimate acquaintanceship with each other, but whether or not the pump spout empties into the milk can, the water gets into the milk through the medium of the cow, and into the can when the receptacle is being cleansed.

FARMERS BUYING AUTOMOBILES.

An indication of the golden harvest being garnered by western Canada farmers can be gathered by the fact that J. C. Doe, a farmer living near Moose Jaw, recently visited Detroit and placed orders for 30 automobiles, totalling in value to over $100,000.

Mr. Doe says that he told a couple of friends that he intended to buy an auto when in the east and before he got away he had been commissioned to buy 29 others for farmers in the neighborhood. His own machine cost $4,500 and the others cost from $3,000 up, most of the deals being closed for cash or bank drafts. The machines will not be delivered until spring. "Give us a garage, and some speed regulations, and we'll be right up with the eastern cities," says Doe.

OFFICIAL NEWS

N. A. M. P. & S. F. of CANADA

OFFICERS 1909-10

President,—Joseph Laurier, Montreal. Vice-Pres.,—G. H. Cooper, Toronto.
Treasurer,—H. Mahoney, Guelph. Secretary,—H. W. Munday, Montreal

Provincial Vice-Presidents,—Nova Scotia, Frank Powers, Lunenburg; New Brunswick, Wm. Watson, Moncton; Quebec, J. E. Walsh, Montreal; Ontario, R. J. Shannon, Toronto; Manitoba, R. L. Beattie, Winnipeg; Alberta and Saskatchewan, E. J. Young, Calgary; British Columbia, John Colbert, Victoria.

Chairmen of Committees,—Legislation, H. A. Knox, Ottawa; Sanitary, P. C. Ogilvie, Montreal; Apprenticeship, J. Griffin, Montreal; Essay, E. Russell, London.

Next Convention will be held at Toronto the last week in August, 1910.

ENCOURAGEMENT FROM TWIN CITIES.

John Marshall, Alex Cameron, Jack Culliton and N. L. Cronkite, four "lives wires" from Port Arthur and Fort William, are spending a fortnight visiting Toronto and other eastern points on behalf of their plumbing supply business, established a year ago.

Mr. Marshall, who is an old Toronto boy, and who left Toronto three or four years ago with a bunch of non-negotiable "I.O.U.'s" and has since made good in the twin cities at the head of the lakes, is an enthusiast on the benefits derived from the supply house they have established. As he put it, "It has injured no one and has done us a whole lot of good."

All the Port Arthur plumbers and most of the Fort William firms hold stock in the company. The members, of course, receive dividends on the amount of their investment but no favoritism is shown in making sales, every firm in the district being able to buy from the supply house at eastern prices. This places all on the same footing so far as material is concerned and as labor also costs every one the same it is merely a matter of education to have each firm figure so that a fair margin of profit will be add to all work undertaken.

"I did not do much more than half the business in 1909 that I did in 1908, but I made more money," said Mr. Marshall. "In 1908 each firm had a lot of money invested in baths and other supplies on which we were paying the bank interest. In 1909 the supply house carried a better stock for us and instead of paying the bank seven or eight per cent., we received that much in dividends on our stock in the supply company. One manufacturer has given us a little trouble but with this exception the supply men and manufacturers have given us every encouragement in our efforts to put the trade on a better basis."

Mr. Marshall says that the plumbers in his district will heartily support the proposition that the National Master Plumbers' Association change its name to the Canadian Society of Sanitary and Heating Engineers. He says it is an opportune time for the big men in the trade to take hold and aid in the work of reorganization to be undertaken at the national convention to be held at Toronto next August.

Prospects are bright for the biggest building year in history at the head of Lake Superior, many of the propositions being well beyond the paper stage.

Farm Heating, Drainage and Water Supply

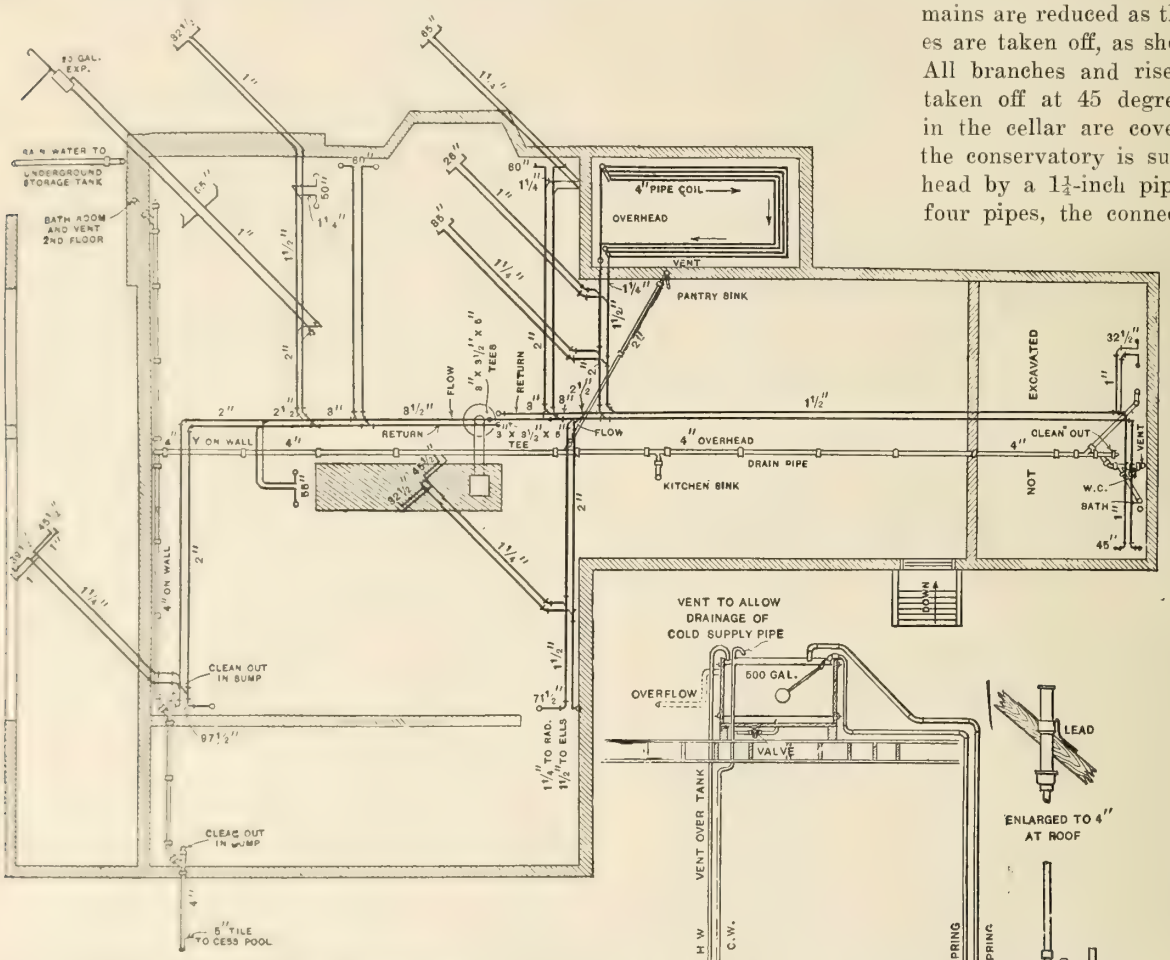
An Example of Work Done in a New England Farm House as Described in The Metal Worker — Canadian Farmers Beginning to Spend Money on Improving Their Homes — Business Can be Secured if Gone After.

During the past couple of years a new field of opportunity has been opened to master plumbers, and with the prosperity which farmers have been experiencing there is hardly any limit to the possibilities of this branch of work—that of installing plumbing work in the better class farm houses.

Farmers were slow to take to the new fangled ideas of heating their houses by furnaces, but with better methods of working their farms and better returns for their labor they have more recently taken up rural telephones, automobiles, hot water heating, septic tanks and now the windmill is giving place to the hot air or gasolene engine, and some farm houses of to-day are as fully equipped with heating, lighting and sanitary apparatus as residences in the larger towns and cities.

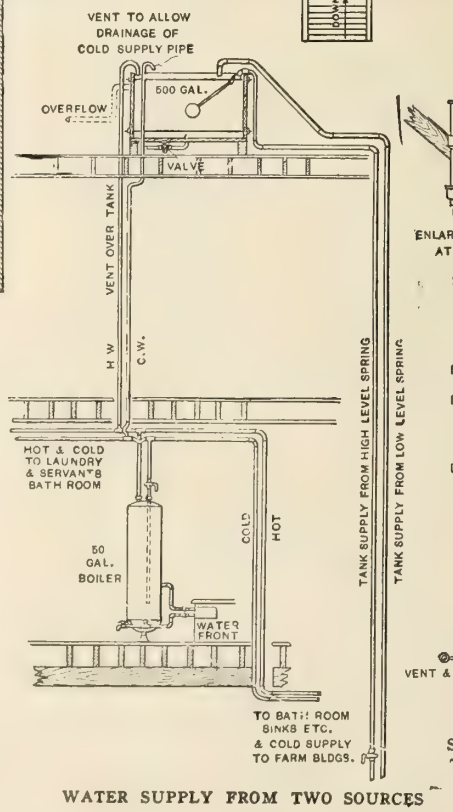
In the accompanying sketches is a good illustration of what can be done in this respect. Besides the work in the house proper, a considerable amount of plumbing is necessary in the equipment of modern dairies, stables, etc., and in this case the usual conveniences were provided in the various buildings. There are no uncommon features in any of the works, so that the job may be taken as fairly representative of what is being installed in hundreds of other houses of similar pretentions.

Heat is furnished by the circulation of water heater in a round sectional heater of 1,400 square feet rating. There are about 960 square feet of radiation, which, with the exception of a coil in a small plant room or conservatory, is of the three-column cast iron type or 5 and 6½ square feet per section. The heater is tapped 5 inches and a piece of 5-inch pipe with flange unions connects the heater to the flow and return mains, sending a 3½-inch branch to one side and a 3-inch to the other, as shown on the plan, which also gives the run and size of risers and radiators supplied. The mains are reduced as the various branches are taken off, as shown in the sketch. All branches and riser connections are taken off at 45 degrees, and all pipes in the cellar are covered. The coil in the conservatory is supplied from overhead by a 1¼-inch pipe and consists of four pipes, the connections being made



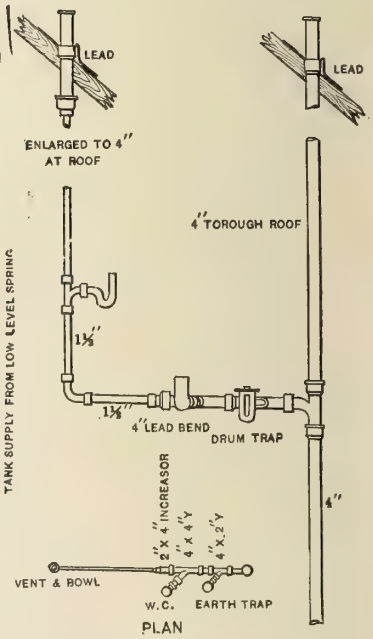
PLAN OF FARM HOUSE, SHOWING DRAINS AND HEATING PIPING

Fig. 1.



WATER SUPPLY FROM TWO SOURCES

Fig. 2.



SOIL, WASTE AND VENT PIPING

Fig. 3.

by headers. It is fitted around the room just above the floor level. The temperature desired in this room is not more than about 60 degrees.

There are two bath rooms in the house, one of them intended for servants' use. A 4-inch soil pipe connects to tile sewer, as shown on the plan, and is carried from outside of the wall to a point about 12 feet inside the cellar under the floor, receiving cellar drainage through cleanouts, toward which the cellar floor is pitched. The soil pipe after passing the second cleanout is carried on the cellar wall, finishing with a cleanout, and the pipes from the main and the servants' bath room connect to it by Y branches. The pipe to the kitchen, laundry, etc., is carried overhead and finishes with a cleanout, while the soil pipes are continued through the roof for ventilation, as shown in the elevation. The pantry sink and lavatory in the principal bath room are vented on the continuous plant. Laundry trays and both bathtubs, having traps with large water seals, are not revented, and the connections to closets are so short as to make reventing unnecessary. The vent from the lavatory is carried through the roof with an enlargement to 4-inch, as it was difficult to reconnect to the soil pipe stack, owing to the construction of the building. Lead flushings are used around all vent stacks, as shown, the hubs being arranged so that the back is flush with the roof and the lead beaten closely around the hub and down into it before the short finishing piece is calked in. The fixtures used are of the usual type and are of good quality.

There are two sources of water supply, both from springs, as indicated by the piping in one of the sketches. One admits of a gravity supply, but is seasonal, and when not available water is pumped by means of a hot air engine from another spring at a much lower level to a 500-gallon copper-lined tank in the attic. Large storage capacity was not desired, a daily pumping being considered preferable to erecting a large reservoir and the gravity supply being used when, and as long as available. Control valves on the branches to the farm buildings admit of drawing from the house tank or from the upper spring as may be required. A small built catch basin is sunk into the hill from which the lower spring issues, the natural formation of the land favoring the saturation at this point. Probably by sinking this to the rock or hard-pan along which the water is traveling a larger flow would be obtained, but 4 gallons per minute is flowing and the supply is continuous at all seasons. This is ample for all purposes. Both springs are covered.

The hot air pump has a 10-inch cylinder. It delivers 250 gallons per hour to a point 160 feet above it and through a pipe 700 feet long.

A circulating system of hot water supply would have been installed but for constructive difficulties, and with the exception of laundry and servants' bath room the fixtures are supplied from the cellar. Both the cold and hot supply pipes are vented over the tanks to admit of draining and to prevent air locking. The boiler is of 50 gallons capacity, heated by a water front in a range.

The rain water from the roofs is collected in an underground storage tank, from where it is pumped to the greenhouse as required.

ADVANTAGE IN ITEMIZED BILLS.

Probably more people make a failure in their business from want of a proper regard for bookkeeping than from any other one cause, writes D.G.M. in the Metal Worker. Many a good mechanic will go through life with only a bare competency, when he is entitled to something more to his credit, if he devotes some energy to keeping his books in proper shape. Take a jobbing business like that done in the plumbing trade, where most of the day-work goes on the book. The customer as a rule is willing to pay a reasonable amount for the job. He knows that a plumber has to eat and drink like other people and must have a living profit.

Many a plumber will render his bill in a lump sum for a small job, because the workman who does the job is not required to turn in the items of material and time entering into it. When the customer comes in to pay the bill the proprietor or clerk is unable to inform him what has been included to make the amount. The customer grumblingly pays the bill, whereas if he were satisfied by some idea of the items he would be confident that he is paying a reasonable price. Instead he growls because he does not know the facts in the case. Many first-class shops use printed slips so the workmen can itemize each and every article, put down his time and date, and have it signed both by someone where the work is done and by the foreman of the shop, so that his slip can be shown to the customer in case of protest.

A customer's lead pipe springs a leak and in response to a call a plumber from Mr. Smith's shop is sent and the leak stopped. When the customer calls in to settle he finds 75 cents is charged up to him. He argues that the charge is too much: "Why, your man was not there over five minutes." Mr. Smith expresses the opinion that the job cost him that. "How could it"

Mr. Smith to convince the customer of the correctness of the charge, takes out his pencil and commences to figure. "You live out a mile or more, do you not?" "Yes." "Well, I pay my man who did your job $3 per day. I charge 45 cents an hour. He must pick up his tools and get into the wagon, drive up and do the job, get back, put away his tools and get into working shape for the next application, consuming, at a reasonable estimate, an hour to an hour and a half of time. The account would figure:

Labor at 45 cents per hour, we will call	$.45
Solder and coal	.10
Use of horse	.15
Total	$.70

As you will see, the job cost me approximately 70 cents, with no allowance for expenses of conducting a business, so I am really poorer for your coming into my shop." "All right, Mr. Smith, here's your money — I won't object farther."

Very few men object if they have an intelligent understanding of the cost of a job. At the present high cost of labor there is necessity of rendering an itemized account of every article entering into the bill for a job in order that the plumber as well as his customer may have justice done.

PLUMBER'S NOVEL WINDOW.

Brantford, March 29.—One of the most cleverly-thought-out Easter windows in the city, was that of T. A. Cowan, plumber and gasfitter. Hay was plentifully bestowed in the bottom of the main show window, and here and there, scattered throughout, were indentations where a hen was apparently hatching out a nest of eggs. These eggs were natural in appearance, but on closer investigation —and they were of a nature which seemed to demand a closer look—they proved to be half-round inverted gas mantles, with the bottom ends buried in the hay. To add to the realistic appearance, two stuffed hen pheasants were placed in lifelike attitudes near the nests, as if in the act of defending their eggs from any biped or winged maurauders, while here and there, Easter chicks, all fluffiness, peeped out into the new world they had entered. The window was, in all, a very striking one, and drew much attention. A. W.

Some Anomalies in Modern Plumbing Regulations

Discussion on Address by J. Pickering Putnam, at Boston—The Utility of the House Trap Argued—Practical and Theoretical Men Disagree — Conclusion of Discussion From Last Issue.

Chairman Johnson.—We shall be glad to hear from Mr. Felton as to his experience at Brockton in the omission of the house trap.

House Trap Omitted 14 Years.

Mr. Felton.—While the omission of the house trap seems to be regarded as more or less of a novelty, yet I can say that in Brockton for the last fourteen years no house trap has been installed on any connection with the sewer. We have some 3,000 to 4,000 connections, all of which are minus the house trap. Its omission is compulsory, and I have yet to hear of any complaint by reason of its omission. While the quotation of vital statistics is liable to be misleading, it is a fact that of all the cities for which statistics are given by the Massachusetts State Board of Health, with a population of over 25,000, I think the death-rate in Brockton is the lowest. This may or may not have any bearing on the subject. It is evidence, perhaps, of a negative character, in that it proves that the omission of the house trap is at least not of a very deadly nature. At the time of the installation of the system there was more or less controversy over whether this trap should be omitted, and a report was asked for from Mr. Rudolph Hering on that subject, and at that time he did not treat it as a novelty. He said the trap was omitted in many places in this country and quite commonly abroad. I have his report here. It is short and perhaps I had better read it in its entirety. This, you understand, was written some fourteen years ago, and possibly his mind may have changed on the subject.

Ventilation Through House Drains.

The ventilation of public sewers is important both to enable the air within the same to be kept at atmospheric pressure in order to prevent the traps connected with the system from being unsealed, and to cause an exchange of air within the sewers. The usual method of ventilating public sewers is to have perforated manhole covers and thus allow the ingress or egress of air at every street interesection, or wherever manholes are located.

Private sewers or house drains are usually disconnected from public sewers by traps, and are themselves ventilated by means of fresh air inlets provided for near the ground and generally at the sidewalks, by which the air enters and, after circulating through the house drains, is permitted to escape above the roof through the open soil pipe. There is no serious objection to this method of ventilating both sewers and house drains. A better way, in my opinion, because it is more effective, is to ventilate the public sewers through the house drains. When the other method is employed we generally find the fresh air inlets closed with dirt, or, in the winter, with snow and ice. The objection claimed for ventilating the public sewers through house drains is the supposed danger of getting sewer air into the house if any pipe in the latter is not right. In my opinion the danger is more imaginary than real. The air contained in the pipes will escape at the larger opening above the roof, provided the pipes are properly dimensioned, rather than escape through small cracks in the rooms of the house, even should there be an imperfect joint. The same danger, however, is imminent from the house drains themselves if they are not air tight. The continual passage of air through them from the sewer will give them much more ventilation than if they relied on the so-called fresh-air inlet, and are thus found to be much cleaner. Any possible escape of sewer air from them will, therefore, be less offensive and less dangerous. On the continent of Europe, and particularly in the colder countries, it is considered decidedly preferable to ventilate the public sewers through the house drains. In our own country we have several cases of this kind. No complaints, as far as I know, have ever been made against the actual working of this method of ventilation either in Europe or in our country.

To reduce the possible dangers to a minimum, and also for other reasons it is my opinion that house drains should be under municipal control. This requirement seems to me to be even more important than the control of pipes for water and gas supply within the premises, because in the latter any defects at once become apparent. All house drains should be tested as to their air-tight condition after construction, and they should be so laid in the building that they can be readily examined at any time, and they should be so examined regularly at certain intervals.

There is another advantage arising from a good current of air from the public sewer through and out of the soil pipes which is of value in colder countries. The great current of air escaping at the top of these pipes renders them less likely to become choked in winter by frost than if there is but a small current in them, as would be the case if the frsh-air inlets are small and partly stopped up.

If you can establish municipal control of your house drains and keep your sewerage well cleaned and flushed, the ventilation both of public and private sewers obtained partly by perforations in manhole covers, acting as inlets, and the soil pipes in houses, acting as outlets, is the best and most thorough system of ventilating sewers.

(Signed) Rudolph Hering.

It seems to me, after our fourteen years of experience, that the danger is more imaginary than real, as Mr. Hering has said. Our inspector of plumbing informs me that he has never heard a complaint by reason of the odor from the pipes communicating to neighboring buildings. He spoke of a case in this city. He said that Boston recently, I believe, made this compulsory, or at least optional—perhaps Mr. Craig knows about that—and that a case was being fought by someone who was being compelled to enter. Whether that case has been settled I do not know. The contention of the complainant was, I believe, that the ordinance said the pipes should extend to the roof without obstruction, and the defense claimed that the trap was not an obstruction. It appeared further that the defendant in this case was not particularly against the method if made obligatory upon everybody, that is, if the law were made retroactive, so that all traps now installed might be eliminated. But he decidedly objected to having his houses used as a vent for the whole Back Bay —I believe that is where the case occurred—and as a sewer ventilator for the whole system. I don't know how that case was decided, whether the defendant was obliged to remove the trap or not. But he had very decided ob-

jections to its omission. Perhaps Mr. Craig knows about that case.

Plumbers Want Simple Law.

Mr. Craig—That case occurred on West Street, I think. That was the first case of it. The owners objected to making their pipes vent pipes for the surrounding half mile square. I hear that they have got traps in. But there is a board of appeal attached to the city ordinance, and the board of appeal decided that it was optional with the owner whether he used the running trap or not. Don't get the plumber's condition confused. I am not against the putting in of the running trap or the taking of it out, only in reason. In the older part of the city of Boston it might be dangerous for the reasons mentioned by Mr. Coffey, and those observed by myself and others, to have the joints all warped out of position and loose. Admitting that sewer air is not very bad, a man doesn't want his job disintegrated from this matter of steam and heating. If that could be avoided I wouldn't have any objection whatever to it. If you are laying out a new section where a number of new houses are to be erected, it would be a fine thing to do. It would be a fine thing for a residential place. The city of Newton has it and the people of that city don't find any fault with it. They think it is all right. It is hard to lay down any hard-and-fast rule. There is a great deal of force in what Mr. Hering said.

Mr. Felton.—It seems to me that with trap omitted a perforated manhole cover is entirely unnecessary. It is an objectionable thing for other reasons than the odor, and I have entirely stopped using it. When you have as many openings as you do in a system without traps, it seems to me the holes in the covers are but a small fraction of the total vent area and are unnecessary for ventilation.

Mr. Craig.—I did not mean that we should throw the law over. I did not mean that even if I said it. I meant simply that some simple form of looking after the instalation of plumbing is all that we need. I have said so to the plumbers themselves. I reiterate it here. We have found that this legislation is hysterical and has led us into a lot of errors. Now we are going back to some simpler form of plumbing instalation. That is what we are looking for, and the simpler the new form is the better we shall like it. We don't want a plumbing law so extraordinary that it will require the services of a lawyer to unravel it. It is a simple matter to put in a few pipes. We have had a lot of mystery surrounding it, and as a result everybody becomes alarmed and says a commission ought to act on it and ought to take it under advisement and dissect it.

Mr. Watson.—You believe in having principles established rather than details.

Mr. Craig.—That is it exactly.

Ventilating the Sewer.

Mr. Dorr.—May I say a few words about the house trap? All this discussion has been regarding the means of preventing sewer air from getting into the house. Sewer air is foul or not in proportion as the sewer is ventilated. If the sewer could be adequately ventilated there would not be anything deleterious about sewer air whether it got into the main stack or not. There are ways of ventilating the sewer. One is through the house system. The other is through perforated manhole covers. That is the system that has been adopted. And that has been found to be a very imperfect system. In the first place, at certain seasons of the year it won't work at all. When those perforations are stopped up with ice and snow, our system of sewers is practically unventilated, and when the sewers are suddenly filled with water, no matter what trap you have, the sewer air will be forced into the houses. Now let us consider the relative importance of things. The sewer is the main thing. Isn't it better to adopt a system by which the sewer can be adequately ventilated and the sewer air rendered innocuous at all times than it is to go into all sorts of complications to prevent the air from getting into the houses? I agree with the gentleman from Brockton. If the running traps all over the city were abolished and taken away then the perforated covers could be done away with and the sewer air would not be thrown out into the streets right under the windows, which is certainly a much greater nuisance than discharging it through the stack pipe.

Mr. Weston.—It is difficult to understand how one can apply the same rules in the case of a brand new sewerage system, with new houses and new streets, that one would apply in the case of an old city, where the sewers have been built on the combined system; where the sewers have sagged and clogged; contain deposits of decomposing and fermenting matter, giving off gases, and are not adequately ventilated. It is impracticable to lay down any law to cover all these conditions. Each city must establish general principles applicable to its own conditions and leave a good deal to the individual discretion of the city engineers and the plumbers who carry out the work. I have received a letter from Prof. C. E. A. Winslow as follows:

"It seems to me that the difficulty with plumbing regulations arises mainly from the fact that plumbing has never been treated as an engineering problem. I do not use the word 'engineer' in a narrow sense. I consider myself an engineer, a biological engineer if you like. On the other hand, I do not use the word 'engineer' as synonymous with any worker in natural science. It seems to me that an engineer is not simply a man who utilizes the forces of nature, but one who attemps to obtain maximum results from such utilization at a minimum cost. That is, the element of cost-efficiency must always enter into the work of a real engineer. Now applying this generalization to our particular problem, it is possible to obtain varying degress of protection against sewer gas. We can, for example, insist that every fixture shall be trapped, that is, that there shall not be constant open connection between house drains and sewers and apartments. This is a minimum. At the other extreme we may demand traps on individuals' fixtures, each protected by a special vent pipe opening to the air above: and we may demand further a disconnecting trap between the house system and the sewer. Undoubtedly the first provision will keep most of the sewer gas out of our houses. Undoubtedly the second type of regulation will keep out more. The original idea, derived, perhaps, from the time when sanitation was a branch of medicine and not a branch of engineering, was that all sewer gas must be kept out of all houses at all times, at all costs. That was perhaps a reasonable position when the danger from sewer gas was supposed to be very great. To-day, however, our views of this menace have materially changed.

"We know that the danger from sewer gas can lie only in two things: either in the transfer of infectious germs or in the presence of poisonous gases, which may gradually lower the vital resistance of the body. The early researches in bacteriology tended to show that the former danger, that is, the danger of transmitting disease germs, was not an important one, since bacteria are not readily detached from moist surfaces and are not present in large numbers in sewer air. It became pretty generally accepted in this country and in Germany that the danger of specific transmission of disease by sewer air was slight. In England, on the other hand, the older view still lingers, and within the last two years it has received important support from experiments carried out by Major W. H. Horrocks at Gibraltar and by Dr. F. W. Andrewes in London. These observers infected the lower traps of a plumbing system by pouring in cultures of specific germs, and afterward detect-

ed the same bacteria in the air of the upper parts of the system at considerable distances above. It happens that for the last two years I have been at work on the question of bacteria in sewer air under the auspices of the National Association of Master Plumbers, and I have arrived at results which, while not contradicting those of Horrocks and Andrewes, throw a very different light on their interpretation. I have found that specific bacteria are indeed discharged into the air from the surface of foaming, soapy liquids, but that the quantitative air pollution brought about is extremely slight. It seemed from my earlier experiments that Horrocks and Andrewes had demonstrated a possibility, but a possibility of such slight numerical importance that it could safely be neglected. In order to test this view I examined 200 samples of air from 19 different plumbing systems in various buildings in Boston. Of the 200 samples of air taken from the inside of house drains, soil pipes, vent pipes and wastes, only four showed sewage bacteria, and those four were samples taken in the immediate presence and at the moment of local splashing. The air of the house drainage systems in all the other samples was entirely free from sewage bacteria and I calculated that if a person applied his mouth to the upper part of a house drainage pipe and breathed the air for twenty-four hours he would inhale fewer intestinal bacteria than he would ingest in drinking a quart of New York water.

"The practical conclusion from these experiments is, of course, that the danger of contracting specific disease from sewer air is slight. There remains, of course, the possibility that sewer air may predispose to certain epidemic diseases by a general lowering of the vital resistance. Whether this is true or not we cannot at present say. The subject well deserves careful investigation, and I hope to make some study of it during the coming year. At present, the evidence that this phenomenon plays an important part in epidemiology is of a somewhat uncertain nature.

"In view of these facts it seems clear that while we are right in spending money for plumbing which is free from gross defects, we are not as obviously justified in recommending large expenditures for refinements like back ventilation systems and intercepting traps between the house and the sewer. The trapping of ordinary fixtures does away with most of the possible danger from sewer gas. There are plenty of traps which will give a reasonable degree of security against siphonage without back ventilation. I believe the money now spent by the community and by the householder in securing double and triple safeguards against the possibility of defective traps could be much better devoted to improvement of the milk supply or to some other phase of the campaign for public health, which we can actually prove to be of practical importance."

Apathy of the Public.

Andrew D. Fuller.—For the past ten years I have made a study of plumbing from the engineer's, the owner's and the plumber's point of view, and for some time have been intimately connected in a consulting capacity with a testing and inspecting bureau which constantly examines and reports on plumbing instalations.

While the paper and discussion presented to-night are very interesting and useful to me, those who have not made a special study of plumbing may, perhaps, carry away some erroneous ideas from this meeting on account of not knowing the weight of opposing ideas not here presented, and the fact that most of the present plumbing is the result of influences other than scientific.

A great difficulty we have to work against is the general apathy of the public toward the drainage pipes within and without the buildings, and the disposal of the drainage. As a rule, what annoys the property owner is a leak or an odor, either will stir him to action and a temporary interest in the plumbing situation.

Even with a properly trapped system there are additional means of contaminating the air by reason of the unclean condition of the overflows of the different types of fixtures; some can be cleaned easily, although commonly they are neglected, and others, like the old patent overflow bowl, are so difficult to clean that they are rarely cleaned until the odor brings it to the attention of the user. This condition exists on the house side of the trap. On the sewer side of the running trap the pipe in the ground is often badly laid. When there is no sewer in the street the disposal of the sewage is oftentimes a bad source of contamination for the ground and air immediately surrounding the building. Cities and towns go to a heavy expense to install a sewerage system, and then do not require even a majority of the buildings to connect with the sewer. If the owner has a cesspool on his premises, and is fortunately situated on a rise of ground, so that his cesspool underflows his own land and on to that of his neighbor, and his neighbor does not know it, the owner will not as a rule connect with the sewerage system. About the only way that one can get that owner or neighbor to connect with the sewerage system is to make a complaint to the local board of health. That is an uncomfortable thing to do, unless one has in his house some form of sickness which can be traced clearly to his neighbor's drainage. Such a complaint occurs so seldom that many a town forces its residents to a great expense for a sewerage system and then does not force the people to get the benefit of it. That is not right because the state sewer tax in the metropolitan district is assessed on the towns on a basis of population and valuation. The town generally bears some part of the sewer tax from the general tax levy, in some towns the whole tax and in others a part, the balance being made up by the abutters supposed to be benefited. Now the part that is assessed on the general tax levy is assessed on the farmer or the suburban man whose property cannot be connected with the sewer, for the reason that the sewer has not been, and perhaps cannot be, extended to his district. Yet his assessment is legally justifiable on the ground that the sewer is a general benefit to the community. As a matter of fact, the sewer system is not a general benefit to the community unless a large number, or the greater number, of the houses are connected.

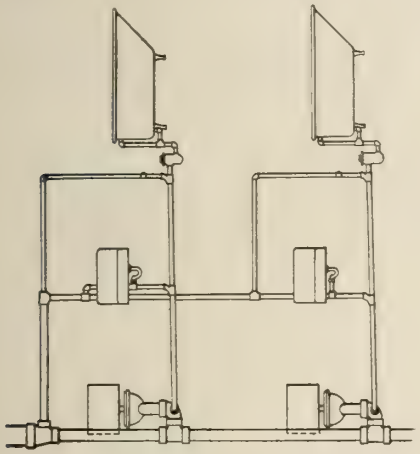
This paper will help to arouse a greater interest among the people in the plumbing situation and in requiring better work. We have come across many violations of the law in regard to good plumbing and good workmanship. It is evident that neither the plumber nor the city inspector has done the work he ought. It is necessary to get the plumbers and the public more interested in the general situation and to endeavor, whatever the law is, to do better work, and to require better work. By this we shall get fully as much protection as we shall in the immediate future by changing the laws. I am in favor of changing the laws gradually and have made a schedule of laws that it appears might be uniformly adopted. Those laws are made very simple in order to get something that the public, the city officials, the inspectors and the plumbers will back up and take an interest in seeing carried out.

A company for the manufacture of plumbers' supplies is being organized in London. The incorporators are William Miller, former assistant manager of the Labatt Company's Toronto office, Hamilton; Albert Somerville, Thomas Rich, Benjamin Noble, of Noble & Rich, master plumbers, and Hugh Carroll. The company is said to be after the plumbers' supply business of the Labatt Manufacturing Company. Application for incorporation has been made, and the company is to have its head office in London. The capital is $70,000, divided into 700 shares of $100 each. W. E. Wismer is financing the company.

Criticism of Closet Bend Ventilation

Paper Read by W. H. Jennish, at the Recent Meeting of the American Society of Plumbing Inspectors and Sanitary Engineers,, at Trenton, N.J.

In my opinion there is a great amount of money spent each year for certain soil pipe ventilation which could be saved for the property owner, and in no way jeopardize the work, and this is mostly on closet bend ventilation.



Bath and Basin Waste Connected to Closet Bend.

I remember years ago when every front wash-out closet has its vent horn and we passed along the lines of evolution from the old brass connection, then rubber connections, next slip joints and lastly without any vent horn whatever. We then started bend ventilation, next improved closets, and then after a time we dispensed with a bend vent if it was a top fixture on a stack and only vented the lower ones.

For a number of years some of us have dispensed with all bend venting in residence work and business blocks if less than three stories in hight, except along branch runs. We still run waste pipe lines into closet bends, and this method gives a certain amount of ventilation to the bend.

I cannot make myself believe that the idea of connecting waste lines into the bends is entirely wrong, as contended by some authorities, and the so-called objections are not too well taken. Personal observations and much inquiry among the plumbers in our section fail to show the weakness claimed for this method of waste connection.

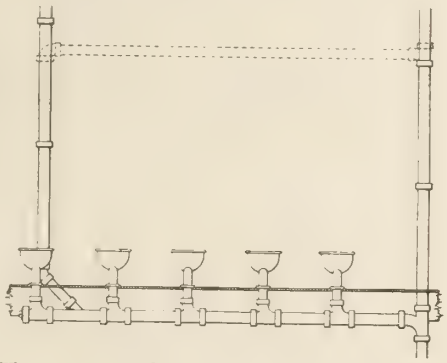
On inquiry among authorities on plumbing the claim is made that a waste line wiped into a closet bend will break out around the solder line from the expansion and contraction of the waste line. This I am not ready to concede, as all our work has been done that way for years, and if entirely wrong I would certainly have found some broken connections, none of which have come to my observations.

The method of placing a Y below the sanitary T to receive a waste line from the bath room fixtures, and only connect the closet bend with a sanitary T and then vent the bend, is a long way around to accomplish a desired result that the simpler method will do and do just as well.

I have examined first floor closets set under these conditions in buildings where the first floor was vacant for weeks and the upper floor in constant use, and found the trap seal still unbroken and practically the only loss was by evaporation. With these facts I failed to see the wisdom of the added vent line to the closet bend.

Where we use a range of closets we run our lines with either sanitary T's or Y's and continue the full size of the line of pipe from the point between the last two closets out through the roof or back into the main stack and omit all separate vent lines to each separate closet bend. I have taken closets set in this way and flushed them separately, in threes, fours, fives or all but the first one, simultaneously, and have yet to find a single seal broken from the test.

Theoretically I may be wrong, but practically I think I am right in my contention that the only good of a vent to a bend is to prevent siphonage, and if this can be prevented without the vent



Unnecessary Closet Ventilation Avoided.

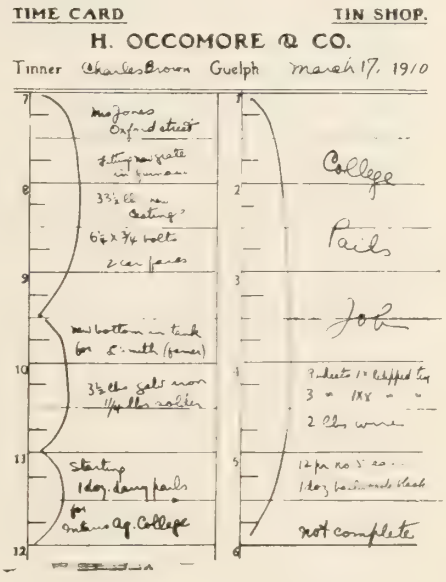
it is then a waste of money to put it there.

I do not wish to be understood as advocating the long runs from a stock and set a closet on a dead end. If the closet is more than 3½ feet from the main stack and no waste line is run into the branch, I would require a vent to be placed in the bend or close to it.

I could cite other places, such as drum-trap ventilation under certain conditions, under which the vent pipe does not add anything whatever. But I started out to confine myself to the closet bend ventilation and for that reason will not take up anything along the other lines. The job that looks the best to me is the job that has the smallest amount of pipe and fittings to properly do the work. This is one of the reasons why I favor circuit venting and short runs.

GUELPH DEALER'S TIME CARD.

H. Occomore, Guelph, has a system of keeping the time of the workers in his tinshop, which has worked out very satisfactorily, every minute of the tinsmith's time being kept track of, the system being illustrated in the accom-



Tinners' Working Sheet.

panying form. The sheets are taken by the bookkeeper every day and charged up against the customers concerned. Then the sheets are put into weekly bundles and filed away for future reference if required.

The plumber, in consequence of the fierce competition existing in his profession, has been forced to use inferior grades of brass goods to enable him to get his fair share of the business offering, and as a result has been forced to endure the inconvenience, annoyance and subsequent loss caused by inferior goods installed at competition prices. It is gratifying to know, therefore, that the Canadian Brass Company, Galt, is manufacturing a line of brass goods which they claim is equal in quality to the highest grade of imported lines. Only quality endures in any business.

Improvements and extensions to cost $15,000 will be made to the Rosedale stand and club house by the Toronto Lacrosse & Athletic Association.

You should have this Poster

if you want to sell Water Supply Systems

The picture of our poster on the opposite page is printed in one color. The original is in *twelve* colors. People who ought to know, tell us that it is the handsomest hanger of its kind which has ever been turned out. It was designed by H. L. Bridwell, one of the most widely known poster artists in the country. It is a work of art, which you can hang in your window or on your office wall, with a feeling of pride.

This poster is a business getter too. If you hang it where people can see it, it will attract considerable attention. People will want to know more about this water system — the Kewanee System of Water Supply. That means inquiries; and we will help you develop those inquiries into sales.

The liberal advertising campaign which we have carried on for many years, has made a great many people know about and want our water systems. The poster will bring that demand to your door — it will let people in your vicinity know that *you* sell Kewanee Water Supply Plants.

The Kewanee 12-color poster is one example of our plan of co-operation with the trade. We create a lively demand for our water systems; and then we help our dealers sell them. And when you make a sale, it stays made, because everything will be absolutely satisfactory.

Remember that Kewanee Systems are made in Kewanee. Kewanee Tanks are made here and Kewanee Pumping Machinery is made here. It is not like dealing with a firm which buys its material from a dozen different manufacturers and then assembles it. We furnish the complete plant in every case, and then we are responsible for *all* of it.

But to get back to the poster. It will be sent free to any dealer who asks for it. It will be protected with a waxed paper covering and carefully packed in a tube, so it will reach you in a perfect condition. If you are selling private water supply plants now, or expect to do so, you can't afford to be without the Kewanee 12-color poster. When you write for it please mention Plumber and Steamfitter, also ask for complete catalogs, prices and discounts.

Kewanee Water Supply Company, Kewanee, Ill.

1564 Hudson-Terminal Bldg., 50 Church St., New York City 1212 Marquette Building, Chicago, Illinois
305 Diamond Bank Building, Pittsburgh, Pa.

THE
KEWANEE
SYSTEM OF
WATER SUPPLY
KEWANEE
SEE THE DEALER
KEWANEE
WATER SUPPLY CO.
KEWANEE, ILL.
CHICAGO
NEW YORK
PITTSBURG

Pipe—The Greatest of Shop Leaks

Profits Lost by Little Leaks, Which are Neglected—Seven Thousand Dollars for a Pile of Junk—Put the Helper on Cutting Nipples Out of Odd Ends of Pipe.

Written for The Plumber and Steamfitter by Charles H. Denison.

An ordinary leak in a line of pipe, if noticed in time, can generally be stopped before it has caused much trouble or damage. Sometimes it "takes up" of itself. "Pipe," the leaks to which I shall allude, also "takes up"—the profits.

We hear all manner of howls about leaky pipes, but seldom are kicks registered in regard to leaky shops and yet their name is legion. From the dark and dismal shop in the basement to the pretentious one with shining nickel fixtures and a plate glass front there is a constant stream of leaks and that is what helps to sink the profits in the plumbing and heating business, resulting many times in numerous derelicts floating in the stream of commerce.

Yet the leaks appear in all directions. Let's light up one of the shop candles and go "scouting" around the premises. Perhaps we can locate a few of these annoyances.

Yes, I thought so ! and betrayed by its silence too. A mighty bad leak away back there under the cellar stairs and almost hidden by a pile of junk. A broken 18 inch Trimo wrench, and digging around we find four others.

No five "bucks" ever coined will plug up that hole, which if not attended to, may easily run into the thousands of dollars. I know of a firm who spent over $7,000 in four years for tools and at the end of that time had only a pile of scrap on their hands. Was not that particular owner an easy mark ?

Nevertheless we need shed no tears over his plight for if he were too indifferent to set a thrifty example and look after his own interests (or hire a foreman who would), it's a safe guess that the floaters who filled this man's shop would not look out for his welfare.

But listen. I hear another leak approaching on a run and rushing around vigorously in a vain effort to accomplish nothing by getting busy with everything all in a bunch. It's one of the helpers [illegible] forty minutes late this morning, and if the other nine in the shop all do likewise it means a ten dollar bill all shot to bits each week for which one receives nothing. Well ! that leak can be stopped quite easily, or fired, thank goodness. But we are tired poking around in the cellar, let's "dismiss the gloom" and go upstairs awhile.

Coming up the greasy, "rickety" cellar steps we land in the work shop of the establishment. At the back door stands a horse and "shay" (or it would be a shay were it minus two wheels) which would have rejoiced the heart of O. Wendell Holmes, Esq., any old day. The horse would make a fitting subject for discussion in the Ladies' Home Journal, while the waggon has not been tuned up since it was bought, second-handed, two years back at an auction.

Why not invest in a curry comb and brush and give the horse the surprise of its life ? It will feel better, look better, and get over more ground for you during the day.

Repair the waggon, or perchance buy a new one and make it a point to see that it has repairs when needed.

Money in Scrap Pipe.

The work bench ! That needs about a whole chapter to itself.

It is covered with wreckage which has drifted in for some time back. Pieces of rubber packing, the scale and lime from a water front, big gobs of solder, oil mixed with iron chips from the dies and a bunch of tools partly covered with dried mud, while under the bench !

Why there's pieces enough of iron pipe that have not been "worked up" to ballast Lipton's newest racing yacht.

"Pipe" the leaks right here for keeps for the bunch of money wasted each year around the bench would buy a gold-mounted push cart for the twins.

The odds and ends of pipe are generally sold for junk. That is a mistake. There is pipe enough under the bench to make short nipples which would last the shop more than half through the coming season.

The various sizes up to and including two inch, can be cut at a profit. Some people will not agree with that last statement, but it's like this : Put the helper at work on the nipples when he is "loafing."

In the first place these pieces can be cut into lengths varying by one quarter of an inch.

You need such odd lengths of nipples nearly every day in the year, and can not buy them unless you put in a special order. Why not cut them up at odd moments and have some on hand ? Secondly, about one-half the nipples one buys are so poorly threaded that they require cutting over before they can be used. Home made nipples don't i.e., if you make the helper do his duty.

Lastly, figure up how much per foot this junk pipe brings in when cut into nipples and you will see, all things considered, that it does pay to cut up nipples in this manner and that the junk pile leak must be stopped.

A bunch of men who will leave the tools kicking around any old place and without being wiped ought to be given a day off and requested to make good upon their own time. A very few moments spent each day in the care of the tools will keep them in good shape and save money for the shop by the end of the year.

Let's step into the private office now and have a heart to heart talk. Don't get nervous and have visions of the poor house, but keep your eye pealed for several leaks which will turn out to be regular geysers. Let me see that bill for a moment.

Leaks in the Office.

Mrs. E. De Smith Pieface, Dr., to one bathroom outfit, $156.48.

Did Mrs. Pieface settle in full ? Not on your life she didn't. She sent in a check for an even $150 and requested a receipt in full and you was just "mutt" enough to comply.

That $6.48 wouldn't have looked good to your wife would it ? Or have bought a new suit for the kid, or have paid for your trade paper for several years ? But Mrs. Pieface needed it perhaps for the heathen. If so, be a heathen for a while and collect up the bills in full. Why give away money that belongs to you by right. Will your banker take $150 for $156.48 when you are indebted to him ?

Let's cut out the mushy feeling for these customers of the Pieface brand then, and stop another leak in our partially caulked up shop. The next on the programme is not a mere leak. It's a regular trap door and sometimes wide open, continually, at that. I refer to the per cent. upon which you are doing business.

Do you know just how much it is in your business, anyhow ?

If put on the stand (as you may be if you fail to "get next") what kind of a "spiel" would you put up to the judge ?

It costs anywhere from 16 per cent. to 30 per cent. to do business in the plumbing and heating lines and are you trying to edge along on 10 per cent. ? If so, one does not need be very much of a weather prophet to figure out the end. All the other leaks may be plugged in the most effectual and workmanlike manner, but if this particular percentage leak is not stopped it will surely sink the best shop going before it has endured for half its days.

See to it therefore with speed and thoroughness that this leak is not left to "take up" for it never will and the more business done on such a basis, the worse you are off. Such a course would break the Bank of England in due time.

Two more jabs and I am done. The other night Jim dropped into a place on his way home and went into one of the side rooms to see what was doing. He sat down at a table and after a while caught a pretty good hand. Three queens and a pair of bullets looked good to him to the extent of $60. But they were no good. One of the other fellows caught four jacks. Comments are unnecessary.

Poorly Planned Jobs.

The last leak which I will refer to here is the waste of time due to poorly planned jobs where either the journeyman or helper is on the trot half the time after material or information. It's a safe bet that half the jobs upon which money is lost is due to the man who bosses the work, and who fails to reckon how the thing is going to run or pan out, while a little thought put on matters before the work was started might have made the job show a profit, instead of a loss. Make up your mind to-day, that you are going to stop these unnecessary leaks. Go to it with a will. It is impossible to shut off the whole bunch at once, but stop one to-day, another to-morrow and others in the immediate future. You and no one else can do it. You can succeed if you really so desire and by the beard of the prophet you'll soon be able to sport a diamond in your shirt front.

Questions and Answers in Heating and Plumbing

Inquiries Solicited From Readers, Who Run Across Problems Which are Unusual—Just as You are Interested in Reading the Questions Asked by Another Man in Your Trade, so Will the Other Fellow be interested in Your Problems — Send the Queries Along and We'll Answer Them—or try to.

FIGURING TANKS WITHOUT FRACTIONS.

Editor Plumber and Steamfitter.—I am a young journeyman and not very good in fractions. Would you kindly show in your valuable journal a simple way to figure out the capacity of round and square tanks. Kindly put it in plain English, so that one with a limited education can understand how to figure it out without fractions. A plain multiplication tab'e would fill the bill all right. Some of us did not have the chance of others to learn fractions, although may be just as good workmen.

JOURNEYMAN.

Chatham, March 21.

Fractions have caused more boys than a few to play "hookey" from school, and then in after life they have regretted the same. Many times the teachers are to blame, for they fail to make a good explanation. Now, for a long time I had an idea that a fraction was round like a pie and came in quarter-sections, simply because the teacher worked off that old pie-drawing and story on me when she explained fractions. Tanks can be figured up mighty easy by dollars, decimals and fractions and inches all combined.

Now, let's clear away some cobwebs first. You can probably make change all right, so we'll start with something that you know about, and that's a dollar. A dollar is made up of one hundred cents. Now, if we want to write a dollar and one-half, we don't write it $1½, but we write it $1.50. We don't say $1¾, but $1.75. Now, we can do the same thing with inches. Therefore, 1¼ inches becomes 1.25, and 1⅛ inches becomes 1.125; the .125 is one-eighth of one hundred. Figuring any measurement is much easier by decimals than by fractions, and with decimals there is nothing to throw away, and the numbers come out even. Instead of thinking of them as decima's, think of them as certain parts of a dollar, and it will be much easier.

Now, suppose we have a tank that is $6^1_4 \times 4^3_4 \times 3^1_4$ feet each way. To one who has little knowledge of fractions it would be a sticker; but, if you write out these measurements like dollars it looks like this, 6.25x4.75x3.25, and you simply multiply all three together and you find the answer to be 96484375. But hold on a moment. Each one of these measurements has two figures at the right of the period (6.25x4.75x3.25) or six places in all. Now, begin at the left figure (5) and point off six places, and we have 96.484375, or 96 cubic feet and 48 one-hundredths of another foot, or about 96½ cubic feet. You can do this same thing with any square tank if you keep track of your decimal points.

Round tanks are not so very difficult either. We'll go after them in this manner:

The first thing to do is to figure out a way to get rid of the circle, and it is done after this fashion:

You first square the diameter. By that I mean multiply it by itself. Thus, if you had a tank 5 feet by 13 inches in diameter, you would square the 13 like this, 13×13=169. One hundred and sixty-nine is the square of the diameter of the tank. Now multiply this square of the diameter (169) by .7854 and you have the square inches on the bottom of the tank, which is 1327326, and pointing off four places we have 132.7326 square inches.

Now there are 60 inches in five feet, so 132.7326×60=7963.956 cubic inches in the tank. Now, if you want the gallons, just divide this by 231, as there are 231 cubic inches in a gallon. I am going to let you do the last yourself, as by this time you should be able to do it in proper style.—Editor.

THE ALTITUDE GAUGE.

Editor Plumber and Steamfitter,—On my hot water heating job the altitude gauge shows several feet more water than I am positive that there is in the job. We have recently put on a pressure apparatus. Can you give me any reason for this state of affairs?

M. R.

Sherbrooke, Que., March 17.

Probably when you installed the pressure apparatus you neglected to change the location of the said altitude gauge. If you left it on top of the boiler in its usual location, it would show not only the height of water in the job, but would also receive the pressure from the apparatus when it began to get in its work, and that accounts for the additional height registered.

It is nothing of which to be afraid, but if you do not desire it so, and the pressure apparatus is located in the cellar, you can put the gauge on the pipe leading to the tank above the pressure appliance, and gauge will then register truly.—Editor.

"F.A." 'S VENTILATING METHODS.

Editor Plumber and Steamfitter.—I notice in your issue of March 15 you publish an article by "F. A." in Toronto Daily Star, in which he advocates venting into the chimneys. "F. A." is certainly rambling around in the dark.

Say! an apprentice of six months' standing in a plumbing shop who would do such a thing would be kicked out of the shop forever.

What would happen when there was no fire in the boilers or heaters to cause a rapid draft in the chimney? The odors from the sewer would simply penetrate

through the brick and directly into the building.

This is not theory. It's facts, for it has been done too many times in the past, due to the ignorance or greed of some plumber, and the statement does not require any proof. Any plumber, inspector, or member of a board of health who has investigated can vouch for my statement. "F. A." also advocates placing a mat of cotton batting over the mouth of an intake air shaft. Why, such a thing would fill up with dirt and dust mighty soon and require replacing about every twenty-four hours. "F. A." should read the article, "Methods of Filtering Air for Use in Buildings," published on page 10 of the same issue (March 15) to get some valuable pointers upon ventilation, and perhaps in due course of time be able to graduate from the kindergarten class.

H. C. D.

[illegible] March 19.

TAPPINGS FOR RADIATORS.

Editor Plumber and Steamfitter,—Can you get me, from some practical man who has had experience, the sizes which radiators should be tapped for steam? Will appreciate the favor.

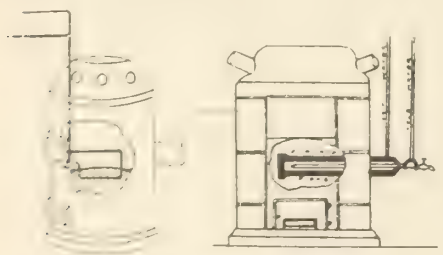
B. S. H.

Montreal, March 26.

We have consulted one of our friends who has been in this heating business for many years and who has installed first-class work all over the country, and he gave us these figures, which he has found successful: Up to and including 30 ft., [illegible]; 90 ft., 1½-inch; 150 ft., 2-inch.—Editor.

COILS IN FURNACES.

Editor Plumber and Steamfitter,—I note in the article by G. W. Thompson, in your issue of March 1, he illustrates the two coils shown in the accompanying sketches. My experience with the first



Domestic Coils in Furnace.

type is that it causes trouble by getting choked up with sediment, which gathers in the trap and cannot be removed, except by taking the coil out. The second one works all right, as when you open the tap when the water is hot, the sediment is washed out.

JOHN W. DIXON.

Hamilton, March 28.

Gossip of the Plumbing and Heating Trade

Items Gathered in all Parts of Canada—Letters Invited From Subscribers, Giving Particulars Regarding Changes in Firm Names, Contracts Secured, Novel Methods of Advertising or Other News—Photos of Anyone or Anything Connected With the Trade Also Welcomed.

Roberge & Latouche, plumbers, Quebec, have been registered.

Atchison & Bradford, plumbers, Montreal, have been registered.

Vallee & Desjardins, plumbers, Montreal, have been registered.

Martin & Tremblay, plumbers, Montreal, have been registered.

The Assetts of J. W. Cadieux, plumber, Montreal, have been sold.

The new waterworks system at Burlington, Ont., is now in working order.

F. A. Cowan & Co. have opened a plumbing shop at 1064 Bloor Street W., Toronto.

The Oshawa Steam & Gas Fittings Co. have changed their name to Fittings, Limited.

Arthur Meager, ex-plumbing inspector of Halifax, has accepted a position at Winnipeg.

Gooderham Bros. are establishing a plumbing business at 43 Magill Street, Hamilton.

Ex-plumbing inspector, Arthur Meagher, of Halifax, has gone to Winnipeg to accept a position there.

The business premises of Victor Cote, plumber, at Ville Emard, Que., were damaged by fire recently.

Garth & Co., Montreal, have secured the contract for erecting brass railings in the Montreal city hall.

Owing to continued ill-health, H. M. Swegles, of Comber, Ont., has disposed of his tinsmithing business to Thos. Beattie.

McLean Bros., plumbers, Westmount, Montreal, have dissolved partnership. Lorne McLean will conduct the business alone.

A cold storage plant, costing $80,000 for the building, and $40,000 for equipment, is to be erected at Winnipeg by S. Hinaccal.

John A. Gordon, Montreal, has been awarded the sub-contract for the plumbing and heating of a residence there for J. Eard Birks.

W. P. Morrisey has been appointed plumbing inspector at Halifax. He has had fifteen years of practical experience at plumbing work.

F. W. Singleton, Winnipeg, has purchased the stock and business of the Brandon Heating and Plumbing Works ftom J. L. Storey.

D. A. Bethune, Montreal, has been awarded the contract for plumbing, heating and wiring a new residence for Mrs. Chas. Thompson at that place.

Lutz, Fletcher & King have purchased a tinsmith business at Lemberg, Sask. W. W. King, formerly of Wolseley, will look after the practical work of the firm.

R. A. McKiggan and G. A. Davison, plumbers, tinsmiths and hardwaremen, Woodstock, Ont., has dissolved partnership. Mr. McKiggan will continue the business.

The Duncan L. Meyers Co. has purchased the business of L. Brickman, the Wellington street, Stratford, plumber. It is understood that they will shortly enlarge the scope of the business.

David Millar, president and manager of the Pease Heating Co., Toronto, has resigned and W. G. Scott, Mt. Forest, has succeeded Mr. Millar, the change taking place on April 1.

McClatchie Bros., plumbers and tinsmiths, Cowansville, Que., have dissolved partnership and the business in the future will be carried on, under the same style, by James McClatchie alone.

J. Mount & Sons, Winnipeg, have secured a permit for the erection of a block of stores and apartments, to cost $12,000, on the west side of Main St., between Bannerman and Atlantic Avenues.

John Ross and John Patterson doing a tinsmithing business at Hamilton, under the name John Wilson & Co., have dissolved partnership. The business will be continued by Mr. Ross under the name of The Ross Stove Co.

James Conroy, father of Peter and Lawrence Conroy, of Conroy Bros., Montreal, died in Montreal last week. He was well known in the city, being for many years with the Post Office.

Walter J. Fulton, western manager of the Dominion Radiator Co., with headquarters at Winnipeg, was visiting his parents in Toronto this past week, as well as cleaning up some business details at the head office.

The Standard Sanitary Manufacturing Company, Pittsburg, have entered action in Montreal for $100,000 damages against the Standard Ideal Co., Port Hope, as an outcome of the High Court of Quebec giving judgment restraining the Port Hope firm from using the word "Standard" on the labels placed in their goods.

Henry Schneuker, for many years head of Schneuker & Rothaermel, hardwaremen at Stratford, has in company with his brother established a new plumbing and hardware business at that place under the name Schneuker Bros.

A fire did $5,000 damage to the building owned and occupied by Wm. Coulter & Sons, coppersmiths, 155-157 George street, Toronto, early last week. The loss is principally in the stock of patterns. It is fully covered by insurance.

Ingram & Davey, St. Thomas, have received theR contract for the requirements of the heating, lighting and power departments of that city for 1910, while Geo. Brown & Son were awarded the contract for the waterworks department for 1910.

A. Desmarchais, formerly with Carter Bros., Picton, Ont., has sold his plumbing and heating business in Red Deer, Alta., to become the representative in Alberta of the Waldron Company, Winnipeg. Mr. Desmarchais has a practical knowledge of all branches of the heating business.

Walter Thomas, who for many years was manager of the Vancouver Gas Company, has patented his apparatus designed to heat one room in a house independent of others, and without putting on a fire in the furnace. It will also prevent over-heating of houses. The device applies to either hot air or hot water.

Gas and Electric Appliances is a new concern recently incorporated, with headquarters at Ottawa. The company is capitalized at $50,000, and is to manufacture and deal in machines, fixtures, apparatus and materials used in connection with the use or consumption of gas and electricity. The incorporators are H. H. Pitts, M. F. MacLeod and S. M. Pitts, all of Ottawa.

W. S. Ramsay, Vancouver, has secured the contract for the complete heating, lighting, gas-fitting and plumbing for the York & Day apartment house, on Seaton Street, Vancouver; also the heating and plumbing contracts for the new Washington apartment house, on the corner of Nelson and Thurlow Streets, and for Steven's block, at English Bay, the latter contract amounting to $20,000.

The Canadian Domestic Engineering Co., Montreal, have been incorporated by the Dominion Government to carry on a general consulting domestic engineering practice in the design and supervision of heating, ventilating, lighting, sanitation and other mechanical equipment for all classes of buildings, both public and private. Incorporators, R. Taschereau, Thibaudeau Rinfret, R. Genest, J. A. Richards, J. E. Billette, all of Montreal.

M. M. O'Connell, plumber and steamfitter, Ottawa, has been awarded the contract for the plumbing, heating and ventilating of the new Golf club building at that city. Mr. O'Connell has just completed plumbing work in the following large buildings: Aylmer Apartments, and a new annex, Roxborough Apartments Canada Life seven-storey building on Sparks St., St. Conrad's and St. Mary's schools, General Supply Co., new warehouse, Gordon C. Edward's, Russell Blackburn's and James Kerr's residences, the new Ashbury College, Rockcliffe, the Anti-Tuberculosis hospital and the Ottawa Hunt Club.

Michael Ryan, 44 Power street, Toronto has invented a "durable basin trap" for sewers. The trap has an iron cap with a rubber collar on it which it is said will make it air tight and prevent the sewer gas from backing up into buildings. There is also a branch pipe which permits of the main pipe being cleaned out in case of clogging or a hose being inserted for flushing purposes. One of the many benefits claimed for the new contrivance is that by its usage the vent used in the old trap is dispensed with, there being a damper on the perpendicular pipe, thus preventing the gas from escaping through it. The down pipe in the private drain, from the eave in front of the house, is the only vent required. Mr. Ryan is not a plumber, but some men in the trade spoken to said from the description such a trap was quite feasible.

The plumbers, gas and steamfitters union of Ottawa, has submitted to the master plumbers of that city suggestions for a new agreement dating from July 1, 1910, to July 1, 1913, and asking both for a shortening of the hours of work and an increase in the scale of wages paid. The plumbers are now getting from 38 to 40 cents per hour under an old arrangement, and working fifty hours per week. They are now asking for an eight hour day, for five days of the week, and four hours on Saturday, or forty-four hours per week. The following scale of wages has been suggested by the men—from July 1, 1910 to July 1, 1911, 43 cents per hour; from July 1, 1911 to July 1, 1912, 44 cents per hour and from July 1, 1912, to July 1, 1913, 45 cents per hour. The employers have this new scale under consideration, and it is expected that an amicable arrangement will be arrived at before July 1st.

BUSY SHOP AT CHATHAM.

The picture herewith shows James Watt & Son's shop at Chatham, Ont., one of the busiest spots in the trade in Western Ontario.

"The photographer caught the shop in a dirty state and we didn't have time to pose for a picture," said John Watt, the head of the firm, who is shown in the centre. There isn't much kick coming, however, as the clean floor, the arrangement of the fixtures, the lighting goods display, and the neat metal ceiling all indicate an orderly shop in which any woman would feel at home without having to lift her skirts to avoid an accumulation of dust or junk on the floor.

G. M. Watt, the junior member of the firm, is standing on the left. George Allan, of the Taylor-Forbes Co., who happened to be in the shop, wanted to dodge the photographer, but Mr. Watt

Interior of James Watt & Son's Shop at Chatham, Ont.

said he'd cancel an order if he refused to show his handsome face to the camera man. George is a good hand at dodging, but he got caught that time. The Plumber and Steamfitter has been trying to get him to write an article for two or three years, but we haven't caught him yet. George can if he will —and here's hoping that he will one of these days.

INTERESTING LEGAL CASE.

A case of interest to plumbers was decided by Judge Riddell, at Stratford, last week, W. S. Evans and others having sued J. R. Myers, plumber, as a result of an explosion at Evans' residence at Stratford last June, in which he, his wife and Miss Kischel were injured. The plaintiffs, Mr. and Mrs. Kischel sought damages from Mr. Myers, whose employes had done certain work in the way of installing additional gas service on the day of the explosion. Considerable evidence was offered, including that of the plaintiffs', the men who had been working at the fixtures as well as a number of expert plumbers. Judge Riddell did not ask G. T. Blackstock, acting for Mr. Myers, to offer any defence and summed up the case, holding that there was no negligence on the part of the defendant company. He dismissed the case with costs, but granted a 30 days' stay. In the event of the plaintiffs showing cause for reversal of judgment Mr. Riddell assessed the damages at $750 for Mr. Evans and $600 for Mrs. Evans.

New Buildings, Water and Sewerage Systems

Opportunities Offered by Municipalities and Private Enterprise for New Plumbing, Heating, Ventilating or Sanitary Systems—Work Being Undertaken in Every Section of the Dominion.

Municipal Undertakings.

Sewer construction work was commenced last week at Hamilton.

Plans are being prepared for a sewerage system at Cumberland, B.C.

Contracts for five sewers were awarded to the York County Paving Co., by the City of Toronto.

The Hamilton city engineer reports that the total cost of the sewers required in the east end annex is $160,000.

G. H. Bryson, acting engineer, of Victoria, in his report on the reservoir states that repairs will cost about $30,000.

Tenders will shortly be invited for approximately eighty tons of castings required by the waterworks at Vancouver.

The by-law to raise $40,000 to complete the waterworks and sewer installation at Wetaskiwin, Alta., has been carried.

The Farwell Foundry Co., Berlin, were awarded the contract for the supply of waterworks extension boxes for Hamilton.

Tenders are being called by North Battleford, Sask., for pipes, hydrants, etc., in connection with the waterworks system.

The Quebec council is calling for tenders for the annual supply of iron castings, brass castings, lead pipe, pig lead, and drain pipes.

The by-law to authorize the issue of debentures to the amount of $50,000 for the purpose of constructing a system of waterworks at Fort Erie, Ont., was carried.

The municipality of High River, Alta., will apply to the Provincial Government for power to borrow $125,000, required for the construction of waterworks and sewerage systems.

F. W. Murdock, city engineer, of St. John, N.B., has been instructed to prepare plans and estimates of cost for the renewal of pipes inthe water distribution system. He will also prepare a report on the matter of additional hydrants.

Five large water mains will be laid on Trolley, Britannia, Kensington, Cannon and Prospect streets, Hamilton, and the services installed as quickly as the people apply for them. The construction of these mains will cost about $19,000.

The Kingston Waterworks Committee recommend that tenders for supplies be awarded as follows: Selby & Youlden, hydrants, etc.; Francis Tracy, steel drills, picks, etc.; Chadwick Bros., service cocks; Canada Foundry Co., valve, etc.; Gartshore, Thompson Pipe & Foundry Co., cast iron piping; Queen City Oil Co., oil; Simmons Bros., block tin, waste, etc.; W. B. Dalton & Sons, fire clay, shovels, etc.; McKelvey & Birch, lead piping, galvanized piping, fittings, etc.

The following tenders for water works supplies for 1910 were recommended for acceptance by the Calgary council: Canadian Brass Co., Galt, brass work for house services, $2,357. J. Robertson Co., Winnipeg, pipe lead, $5.50 per 100 lbs., pig lead, $4.62 per 100 lbs. Gurney Standard Metal Co., oakum, $3.75 per 100 lbs. Crane & Ordway, Calgary, galvanized iron pipe, $3,175. Calgary Ironworks, Calgary, valve boxes, $4 per 100 lbs., and hydrants, $50 all sizes without crane attachment. Canadian Foundry Co., Toronto, crane posts, $54.10; specials, $3.20 per 100 lbs. Bissett & Loucks, Winnipeg, valves, $2,989.30. Union Iron Works, Calgary, hydrants, 8 ft., $49.50; 8 ft. 6 in., $50; 9 ft., $51.50 without crane attachment, with crane attachment $5 extra. Evans, Coleman, Evans, Vancouver, cast iron pipe.

Public Buildings.

Vancouver socialists will erect an auditorium.

A new high school will be erected at Victoria.

Two new school houses will be erected at Kildonan, Man.

A new registry office will be built at North Perth, Ont.

Presbyterians will erect a new church at Outremont, Que.

A new Anglican church will be etected at North Vancouver.

Berlin ratepayers will vote on a $5,000 hospital by-law.

A new collegiate institute will be erected at Hamilton.

Alterations will be made to the city hall, at Prince Albert.

A new north wing will be added to Osgoode Hall, Toronto.

The Winnipeg school board will erect a school to cost $80,000.

A public library and town hall will be erected at Hanover, Ont.

An Anglican church will be erected at Lethbridge to cost $100,000.

A new and up-to-date opera house will be erected at Brockville, Ont.

An armory to cost $10,000 will be built at Prince Albert, Sask.

An isolation hospital will be erected at Peterboro to cost about $12,000.

The First Methodist congregation will erect a new church at Hamilton.

Plans for Hamilton's new public library will be submitted on April 16.

The C.P.R. will erect a new station at Red Deer, Alta., to cost $20,000.

The Church of the Epiphany to be erected at Toronto will cost $40,000.

A new Catholic church will be erected at Verdun, Que., to cost over $100,000.

Tenders are being called for the erection of a school building at Fonthill, Ont.

The new Metallurgy building for the School of Mining at Kingston, will cost $40,000.

A new armory and post office will be erected at Strathcona, Alta., to cost $200,000.

Central Congregational Church, Winnipeg, will build an edifice to accommodate 4,000 people.

Victoria, B.C., ratepayers will be called upon to consider the question of a new city hall.

The contract for a new school at Stratford has been awarded to Wilson & Wilson for $68,000.

Tenders will be called at once for the erection of the Lord Roberts school at Winnipeg. Estimated cost, $80,000.

The Brantford Separate School Board is calling for tenders for the erection of a new school to cost about $18,000.

The contract for constructing the new Logan Avenue school, at Toronto, has been given to Lucas Bros., for $25,837.

Wilson & Wilson, of Regina, were awarded the contract for the new public school at that place, to cost $68,750.

The contract has been awarded for the erection of a new grand stand at Portage la Prairie, Man., to cost $43,500 to D. Winton, of that city.

New tenders in a modified form will be called for the construction of an addition to the Hull, Que., corporation power house because recent tenders were too high.

The ratepayers of Saskatoon will vote on the following by-laws: $100,000, hospital; $9,000, collegiate institute; $21,000 for completing civic hospital and buildings for fair purposes.

The City of Winnipeg is making an application to legislature for an amendment to the charter, so that $500,000 may be raised for hospital and morgue purposes.

Among the recommendations made by the University Commission at Winnipeg is one for the establishment of an engineering college and a college of domestic science.

S. Brown, of Winnipeg, has been awarded the contract for erecting the new collegiate institute at Yorkton, Sask., for $56,860. The building when complete will cost $70,000.

The new naval college in connection with the Government's naval scheme will be built at Halifax, and will cost $150,000. A barracks for the staff and possibly an admiralty dockyard may also be erected at that place.

Two collegiate institute buildings, each to cost not less than $125,000 and to contain from twenty to twenty-five rooms, and one or two public schools of modern type will be built in Winnipeg this year.

General Building.

A Masonic Temple will be erected at London.

A Nurses' Home will be erected at Whitby.

A wireless station will be erected at Winnipeg.

The automobile club at Vancouver will erect a club house.

The Imperial Bank will erect a bank building at Kamloops, B.C.

The Dominion Government will erect a drill hall at Fernie, B.C.

A Y.M.C.A. building will be erected at Portage la Prairie, Man.

J. H. Todd is to spend about $40,000 on a building at Victoria.

The Nichols estate will erect a business block at Digby, N.S.

The Victorian Order of Nurses will erect a new home at Toronto.

A $13,000 brick block will be erected at Victoria by Dr. Gareeshe.

The Canadian Bank of Commerce will build a branch office at Victoria.

W. W. Walsh will build an apartment house at Vancouver to cost $13,000.

The Imperial Bank will erect a new bank at Humberstone, Ont.

The Bank of Hamilton will erect new bank premises at Kincardine, Ont.

The Canadian Bank of Commerce are to erect a branch bank at Victoria.

A. Martin, of Victoria, will erect a garage at that place to cost $6,000.

A club house will be erected at Victoria by the Empress Athletic Club.

The Westholme Lumber Co., are to erect a four-storey block at Victoria.

Cutting Patterns in the Tin Shop

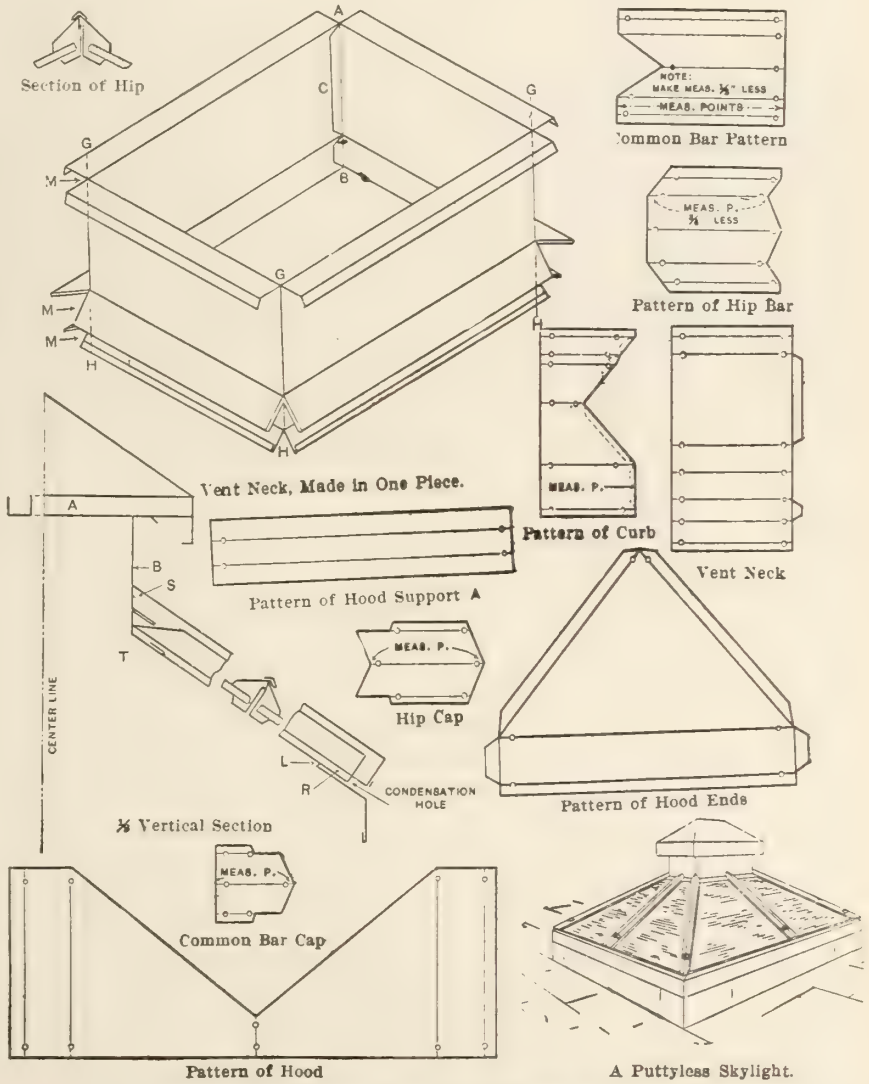
Readers of Hardware and Metal are Requested to Make Use of this Department—Questions Regarding Patterns Will be Answered by Experts—Discussion is Also Invited on Any Matter pertaining to the Tin Shop.

A PUTTYLESS SKYLIGHT.

A method of constructing a puttyless skylight, described by Henry Hall, in the Metal Worker, is shown by the accompanying drawings. Such a skylight has been designed to meet the demand for a cheap but absolutely strong and weather tight light and can be made advantageously in sizes up to 3x3 feet. Being of simple construction, it can be made complete in three hours by a competent mechanic. If there is likely to be considerable call for these lights in various sizes, sheet metal stub patterns should be made for preservation, as per the accompanying sketches. The length of the bars is computed by the usual methods, except that as they do not come down on the glass rest of the curb the common bars are cut ½-in., and the hip bars ¾-in. less than measurements.

The vent neck is made in one piece, as shown in the isometric drawing. In bending this sheet it should be creased along the lines G H before being formed into the required shape. The corners should then be cut out at M, M, M, and the sides of the neck pulled around until the corner A B meets the solder lap at C.

To ensemble, the four sides of the curb should be soldered together and the ventilator completed. After the four common bars have been soldered to the vent at T set them on the curb and tack at R. Next put in the hip bars and tack at R and S. The skylight should now be turned over and the bars soldered at L and the hips at T. It is then ready to be turned back and the glass laid on. Now put on the bar caps and solder to vent at S, thus completing the skylight



PATTERNS FOR PARTS OF A PUTTYLESS SKYLIGHT.

PLUMBING AND HEATING MARKETS

MONTREAL.

March 30.—Orders in some lines are assuming quite rush proportions, while all the way round there is such a decided improvement in business that if the rate of progress be maintained, shipping departments of the supply houses will soon have more than they can handle. There is a most optimistic feeling among the trade generally. The outside districts speak most favorably of the prospects, while locally extra stimulation has been given by the early clearing away of the ice.

Reports as to building get more favorable every day. Work will soon be started, and plumbers are preparing for a strenuous call on their services. In the meantime jobbing work keeps up exceptionally well.

There has been a change in steam radiators, the 2½ discount being dropped. Other lines are firm in price, and the tone of the market is such that advances may come any day. Users should therefore watch the market carefully.

Soil Pipe—Heavy consignments have been shipped these last two weeks. Soil pipe in some places is already going into the ground, while its general using should not long be delayed now. The market is firm, and we quote light 60 off, and heavy 70.

Lead Pipe—There is a good movement in pipe and waste, bends, and calking lead. There has been a decided stimulation in the purely local trade. Supply houses expect a heavy call in a few weeks, as stocks in users' hands are considered light. We quote pipe and waste at 25 off, traps and bends 50, calking lead 5c per lb.

Solder—Solder is moving in better bulk, orders being more generally distributed. The local trade is showing up very well. We quote half and half 20c, wiping 18½c.

Iron Pipe—A good movement is noticed in iron pipe. The outside demand is very heavy already, while the local trade is showing signs of steady stimulation. We quote: ¼-in black, 63; galvanized, 48; ⅜ black, 59; galvanized, 44; ½ black, 69; galvanized, 59; ¾ to 4-in. black, 71½; galvanized, 61½.

Radiators and Boilers—The 2½ discount has been taken off steam radiators, but otherwise the market is unchanged. Orders are coming in steadily, and even now there is not much time to turn round. A great rush is expected when the call comes from the new buildings. We quote: Steam boilers, 60 and 5; hot water boilers, 70 and 10; soil and hot water radiators, 50 and 7½; steam radiators, 50 and 7½ per cent.

Scrap Market—The markets are unchanged with trade on the quiet side. We Quote: Heavy copper wire, 11½c, light copper bottoms, 10c; heavy red brass, 10c; heavy yellow brass, 8c; light brass, 6¼; tea lead, 2½; heavy lead, 2¾c; scrap zinc, 3c; cast iron, $16.

Metals—Domestic lead has declined 10c, and is now at $3.60. The other metals are unchanged. We quote: Tin, 35c; copper, 14½c; imported lead, $3.75; domestic lead, $3.70.

TORONTO.

March 31.—The holiday season last week was provocative of good business. Some out-of-town plumbers took advantage of the excursion rates to pay the city their spring visit and their gravitation to the supply houses helped to stir up trade and book orders.

Spring shipments of plumbing supplies are heavy these days, and the orders coming in are very satisfactory. Large quantities of soil pipe are going out, and the western peninsula particularly is buying heavily. Fort William and vicinity are placing calls for goods, and the season is much advanced over recent years.

The early opening of the building season should make 1910 the best year the plumbing trade has experienced in this country. The demand for better quality goods is noticeable. All prices remain unchanged, but the market is firm.

Enamelware—The movement of enamelware lines is beginning very well. The call at present is for quality goods. Stocks are ample just now and manufacturers are preparing for a good demand all through the summer. Prices hold firm.

Soil Pipe.—Quotations are unchanged. Light pipe is 60 and 10; and fittings, 70 and 10. Medium and heavy pipe are 70 and 10, and 7 and 8-inch pipe, 50 per cent. Trading is very good. April and May are expected to show heavier sales than they did last year. The season is much earlier than a year ago.

Lead Pipe.—Shipments are increasing, and present trading is good and highly satisfactory. Prices remain stationary. Pipe and waste are 25 per cent. off; caulking lead 4¾c a pound; and traps and bends 50 per cent. discount.

Solder—Stocks of solder are high and good sales are reported. The market is firm, though quotations range from 18½c to 20c for half-and-half, and 17c to 18½c for wiping solder.

Iron Pipe and Fittings—Malleable fittings, from 37½ to 40 per cent.; and cast iron 60 to 65; standard bushings 70 and malleable bushings, 65, remain the unchanged quotations on these goods. All the other prices hold firm. Nipples are 75 and 10; headers, 60; flanged and malleable-lipped unions, 65. Galvanized pipe (1-inch) is $6.35 per hundred feet, and black pipe, same size is $4.70. Trading is fair and orders are good.

Brass Goods.—The brass industry is rushed just now and the market is firmer and more steady. No changes have been made. High grade compression is at 60 per cent.; medium, 65; and standard, 70. Fuller work is at 70 per cent.

Boilers and Radiators—Business is getting near the "rush" season, so far as gas goods and connections are concerned. The installation of heating systems, too, are being prepared for. The state of trade is entirely satisfactory. Quotations are unchanged. Hot water boilers and radiators are 50 and 10, and steam radiators are 50, 10 and 2½ per cent. off.

Metals—The market is slightly easier both for old and new metals, though on small lots quotations remain unchanged. Tin is 35c; copper, 14c to 14¼c; lead $3.85 (imported) and $3.75 (Trail). Old metals: iron, easier at 8c; lead, 3c; zinc, 4c; copper, 9c to 10c.

EXAMINATION LAW INVALID.

A setback to good plumbing was given in St. Louis when Judge Klene declared invalid the city ordinance requiring plumbers to pass an examination to show their competency before being granted a license to conduct a plumbing business. This ruling if supported in the Court of Appeals will enable all plumbers regardless of ability to register at the city hall and file a bond of $2,000 as an insurance that work will be properly executed. The ruling was made because of the ordinance conflicting with the statutes, and if upheld will invalidate all the licenses that have been granted to men who have passed the examination. Whether or not the ruling is good law, it is a step in the wrong direction. Only thoroughly competent men should be allowed to work at a business where errors lead to dire effects.—Metal Worker.

The contract for overhauling the Davidson theatre at Moncton, N.B., has been given to Arthur Le Blanc. The Summer Company have charge of the installation of the boilers, radiators, etc.

"IDEAL" QUALITY

"Ideal" Fine Plumbing Lines

"Ideal" Closet Woodwork
"Ideal" Centrifugal Traps
"Ideal" Plumbers' Brass Goods
"Ideal" Soil Pipe and Fittings
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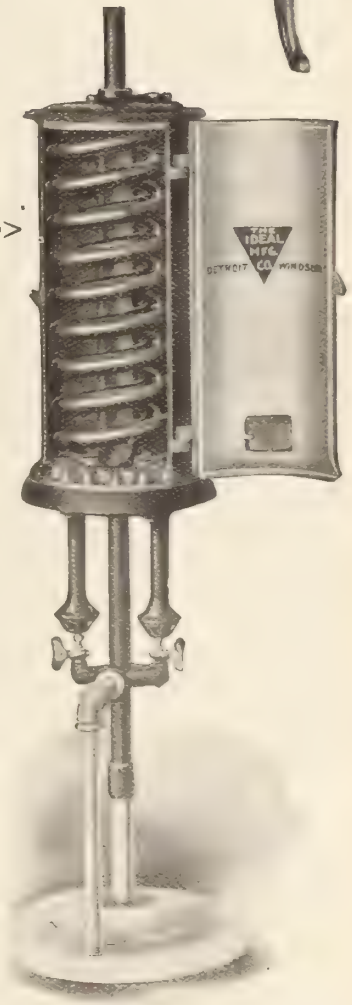

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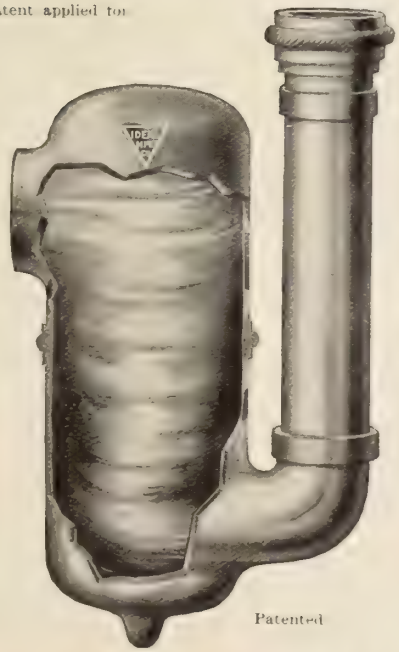
Non-Syphoning, Self-Cleaning.

See that swirl?



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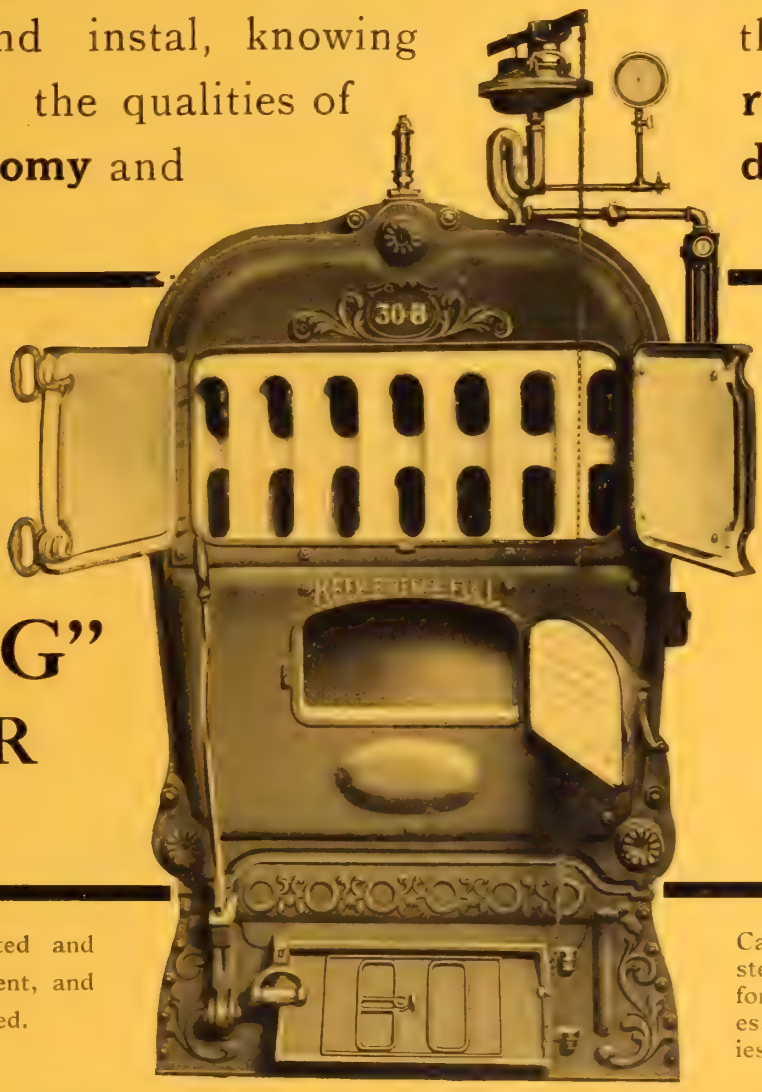

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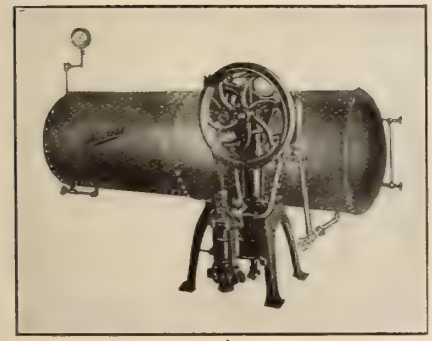

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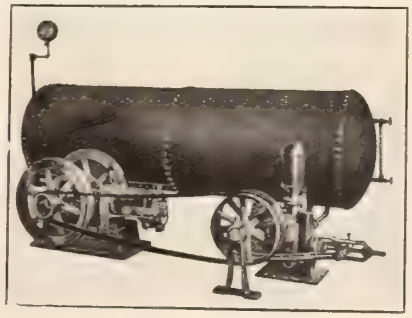

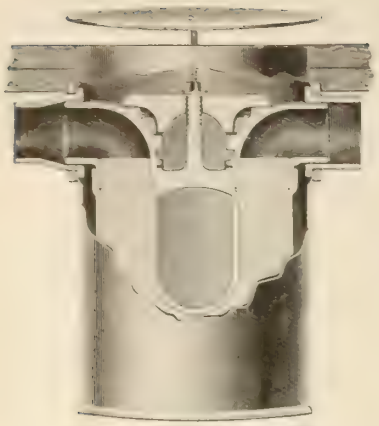

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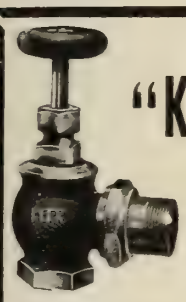

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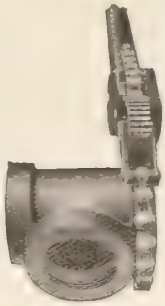

because it overcomes loss of time in quarters where the broader-jaw tools are cumbersome. Is it wise to impose upon a penknife the duty of a screwdriver? Likewise in argument we favor "Agrippas;" there should be another tool in the "kit" if it does lots of things with greater facility. Flanges, short-nipples, right and left hand fittings and innumerable "cramped" places in pipe fitting offer a few reasons for assertion that "Agrippas" are **Tools for Economy.** Discount from dealers. Details from—

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TORONTO, APRIL 15, 1910

WATER SUPPLIES FOR SMALL COMMUNITIES

The address delivered by Mr. Hansen before the Ohio Boards of Health Conference, and reproduced in part in this issue of The Plumber and Steamfitter, will bear study on the part of every reader of this paper. Many of the points are not new, but the arguments in favor of making public water supplies available for every resident of a large or small community are well put.

Every argument presented in favor of public water supplies is a justification of the plumbers' position that sanitation is as essential to the community as to the individual, and every point made in favor of a public water system in a community is an argument which can be used by master plumbers in encouraging farmers and well-to-do residents of rural districts to instal a domestic water system, obtaining pressure from a tank in the cellar or underground.

The preservation of health dictates to rural residents the necessity for pure water for drinking, as well as an ample supply piped into the house for bathroom and kitchen use, as well as for aiding in the disposal of the sewage.

And business acumen should dictate to master plumbers the desirability of getting a thorough grasp of the subjects of water supply and sewage disposal, so that they can bring strong arguments to bear upon the rural dwellers who need the goods the plumber can supply and who have the cash, which the plumbers need in their business.

Obtain a thorough grasp of the proposition, secure the catalogues and literature supplied by advertisers in The Plumber and Steamfitter and make up a list of say twenty farmers or country residents, who can afford to instal a water and septic tank system. Then follow them up with a personal call once a month, until they give an order for (1) a tank, (2) plumbing equipment for the house and barn, (3) a septic tank, and (4) a hot water heating system.

There's money in this branch of the trade if it's gone after, and the first man in each town who makes a specialty of it will be the one who will skim the cream off the milk.

CUTTING PRICES DOESN'T PAY.

What is gained by cutting prices? The total turnover at the end of the year may be more, but where is the advantage. Better do half the trade, and get a fair profit. Cut prices do not make for solid customers, they bring in the casual trade, but seldom the regular buyer. A man who purchases in a cut rate store always has a feeling that the goods he buys may fail him. He has sense enough to know that the merchant must live. Therefore the loss of profit on the one article must be made up in some way. Either by undue profit on another line or by lack of quality.

In talking of cut prices we are not referring to the man who, by his judicious buying, meeting the demand promptly, and by taking his discounts, can afford to get closer to cost, and yet make a fair profit, than the man who is the antithesis of this, and must work on a higher percentage. A fair profit to the one man may be 30 per cent.; to the other it may be 50 per cent.

We are, however, referring to the man who for the sake of killing another merchant, or through the erroneous idea that the bigger the returns the bigger the profit slaughters indiscriminately. He makes it hard for the other man it is true, but he does not put him out of running by any means.

The merchant who refuses to cut has this consolation that when he is buying economically, working systematically, and has his over-head expenses well in hand, he knows that prices that are unprofitable to him, must be equally so to his competitor, so let the latter cut.

The merchant who keeps his prices up gets the confidence of his community. The buyer may kick at paying the price, but if he wants an article, the quality of which must be above suspicion, he goes to the fair profit man and not to the cut rate man. And when the former is really offering bargains, there is no doubt as to the fact. The customer buys with the full confidence that he is getting what has been advertised. With the other man there is not this certainty. Which reputation pays best in the long run?

INEXPERIENCED PLUMBING INSPECTORS.

It is high time that the question of the qualifications of the plumbing inspector—the ability to carry out the work properly and to command the respect of those whose jobs he has to pass judgment upon—should be carefully considered. Many inspectors to-day could not pass an ordinary plumbing examination, or even a special one adapted as a makeshift. What is the use of a health authority making laws to protect the public, laying down this and that regulation for the pumber, and then discount the whole thing by taking no pains to appoint practical men to see that these laws are properly carried out.

Nothing is more easy than for a plumber, if he so desires, to "fool" an inspector who has no experience, and who was probably a cab driver or something of the sort before his true worth as a judge of plumbing work was recognized by the health authority. It says a great

deal for the plumbing fraternity as a whole that the "fooling" of the inspector is not more general than it is.

What respect can a plumber, with all his experience and knowledge behind him have for a man who pretends to pass his work, and has to make a bluff at the whole thing. How farcical it must seem. In a way it discounts the whole strength of the by-laws concerned.

If to the reliable plumber, inexperienced inspectors simply call for ridicule and contempt to the man who is unscrupulous in his work such inspectors are his very salvation. Poor inspection is an inducement to do bad work. The most carefully drawn up by-laws can be set at naught when the inspection is at fault. The very men, against whom the laws are directed are helped by their existence, as the reputable plumbers follow them out, while the unscrupulous ones take advantage of the incapability of the inspectors, and do just the reverse. They can therefore easily undercut the good men who carefully follow the laws, even though they know the inspection will be a farce.

At a recent meeting of sanitary engineers in the States it was pointed out that the relation between the plumber and the inspector, associated as they are in the grand work of the preservation of health and the prevention of disease should be one of mutual confidence, harmony, and co-operation. Each should assist the other in an effort to comply with the requirements of the elements of sanitary science, and the laws as embodied in the plumbing codes. Each should use his utmost influence to induce owners to install only the best work and materials, and to discourage the use of materials or methods of instalation which barely come within the law's requirements, and no more.

It is essential that if the inspection system is to have any weight that the inspectors should be capable men. They should have to pass an examination showing their fitness for the work they have to do. Their training should be such that their verdict is respected by the plumber, and their inspection a thing to be feared by the man who has done shoddy work.

EXAMINATIONS NOT CALLED FOR.

In the new plumbing by-laws adopted by the City of Winnipeg a license fee of $10 for the first year with renewals at $1, licenses being granted to persons, firms or corporations who are practical plumbers or "employ a sufficient number of regular, educated, practical and experienced plumbers to do all the work he or it may engage to do."

In the above, nor in any part of the by-law, can there be found any rule defining what a "regular, educated, practical or experienced" plumber is. No standard is set and neither journeymen or master plumbers are required to pass an examination proving their proficiency. This, in the opinion of The Plumber and Steamfitter, is a decided weakness in the new by-laws, and it is to be regretted that Winnipeg has not followed the excellent example set by Calgary, which a few months ago established an examining board and required every master and journeyman to prove their qualifications in order to continue doing sanitary plumbing work in that city.

Just as shoddy plumbing material naturally gravitates to such cities as Hamilton and London, where no plumbing by-laws exist and no plumbing inspector scrutinizes the work, so will shoddy plumbers gravitate towards those cities where examinations are not called for and it is found possible to dodge the inspector. The city with the strictest regulations gets the best work, and even if the users have to pay a slightly higher price they get the worth of their money.

It seems peculiar that master plumbers do not take a more aggressive stand in favor of plumbing examinations. The salvation of the trade depends upon the raising of the standard of work done and so long as master plumbers seem content to acquiesce in conditions which encourage scamped and shoddy work, so long will the trade deserve much of the criticism directed against it.

TIME TO GET BUSY.

At the national convention at Montreal last September Toronto was chosen as the meeting place for the 1910 convention, the last week in August being selected as the time for the gathering.

Responsibility having been placed upon the Toronto officers of the National Association, Messrs. Cooper and Shannon have been busy during the winter with the result that the organization in Toronto is now in better shape than at any time since the breakup of three years ago. There are now about 60 paid up members of the Toronto Association, and good quiet work is being done, which ought to result in better conditions for those engaged in the trade .

And that a change cannot come too soon is evident by the number of master plumbers who are withdrawing from plumbing and becoming builders. Another case of this kind came to light this week. Last year the plumber built a house, doing the plumbing and heating work himself, and cleaning up $800 profit besides wages for all the time spent on the building. This year he will devote all his time to building, but he will let out the plumbing and heating work, as he can get it done for less than he can earn in doing other work around his buildings.

The national convention is but five months away, and it is time that preparations were being made for the event. The matter is in good hands, however, and if the rest of the country does as well as Toronto the convention will be a reminder of old times.

ORGANIZATION PAYS.

A good story, illustrating the benefits of trade organization, comes from a northern Ontario town—in which the two hardware merchants are both members of the Retail Hardware Association. The merchants are good friends and frequently visit each others houses and have a chat over trade conditions across the supper table.

One of the merchants had sold a bill of goods amounting to about $700 to a lumberman, who was good for the amount, but very slow pay, and after every influence had been used to induce him to pay up, the lumberman's name was passed on to the other hardwareman as a good man to steer clear of.

The lumberman in course of time wanted more goods, and, dodging the man he owed for his former order, he went to the other store. His order was taken and shipping directions taken, when the lumberman asked to have the account mailed and he would pay in thirty days.

"Come back to the office," the hardwareman requested, and when there he showed the lumberman a slip of paper, on which were written half a dozen names, including his own. "Those are people I must ask to pay spot cash," said the hardwareman, "as I understand they have unpaid bills in other stores."

The lumberman paid cash—and he also paid the $700 before he left town, as he didn't relish seeing his name among a list of dead-beats.

Organization has many benefits, but none greater than that of bringing rival merchants together and making them realize that it pays better to be big-hearted friends than small-minded enemies.

Water Supplies for Small Village Communities

Address by Paul Hansen Before the Recent Conference of the Boards of Health of Ohio—Disease Directly Traceable to Bad Water.

The object of this paper is to treat in a brief and general way the feasibility of introducing the advantages in having and the problems involved in obtaining a water supply for small communities.

Before attacking the subject directly, it may be well to outline briefly the history of public water supplies in order to arrive more logically at a consideration of their present status.

The first public water supplies were from wells and streams, to which the inhabitants of the community carried various sorts of receptacles for drawing water necessary for domestic use. This form of public supply is still retained in the "town pump." From the very earliest times some of the public wells were dug or driven to very great depths, as instanced by the noted Jacob's well in Egypt, which extended to a depth of 280 feet. In China, hundreds of years ago, wells were driven to depths of 1,500 feet by methods almost identical with those now in use. In these very early times suction pumps were unknown and the water was necessarily raised by buckets or some form of chain and bucket hoist.

The Romans were the first to build water supplies in the modern sense of the term; that is, supplies which distributed the water through conduits and pipes to various parts of the community. The rulers of the Roman Empire built throughout their domain elaborate systems of conduits, frequently carried for great distances over high and imposing stone arch aqueducts, the remains of which still exist to attest the marvelous engineering enterprise of those days. The ancient Romans also appreciated to some degree the advantages of pure water, and it is related that Hippocrates called attention to the dangers of using water drawn from lead pipes, and recommended boiling and filtering water under certain conditions. During the Middle Ages the water supplies built by the ancient Romans were neglected and abandoned, and even the very purpose of the aqueducts was forgotten.

Early English Water Systems.

Public water supplies again received some attention in the twelfth and thirteenth centuries, but those then built were very crude and served but a few people. The first use of pumps in connection with public water supplies was made in 1582 in London, these pumps being operated by great water wheels propelled by the current of the Thames River. In 1608 a similar water power wheel was installed at Paris. During the seventeenth and eighteenth centuries water supply development was very slow and was confined almost entirely to the supplies of London and Paris.

Until 1800 the mains used in public water supplies were invariably of wood and seldom exceeded seven or eight inches in diameter, and thus it was necessary to lay as many as ten of these side by side to consitute a single artery. The lateral or service pipes were generally of lead. All of the early supplies delivered water to centrally located fountains, and house connections were unknown before 1619.

Such connections were introduced in London in the above mentioned year, but it was not until the nineteenth century that it was deemed feasible to deliver a continuous supply to the individual consumer; that is, persons were expected to draw within a few hours all the water that would be required during the whole day.

Introduction of Steam Pumps.

The first use of steam pumps was probably in 1761, in London. Twenty years later steam pumps were introduced in Paris for the first time.

In 1800 cast iron mains came generally into use and marked a great and important step in water supply development.

During the first half of the nineteenth century extension and improvements in public water supplies was very slow, and the quantity of water delivered per capita was very small. Not until about 1850, when steam-pumping machinery had been greatly improved, did the introduction of public supplies become at all general. It was probably also about this time that the public water supply became recognized as a great fire-fighting facility.

The first water supply in America using steam-pumping machinery was installed in Philadelphia in 1800. The Manual of American Water Works shows that in 1850 there were but 83 public water supplies in the United States, while in 1896 there were 3,196. At the present time public water supplies are being installed at the rate of something over 1,500 per year, and it has become common practice for even the smallest communities to have public water supplies, with all their attendant advantages and conveniences.

Advantages of Plumbing Supplies.

Though not ordinarily recognized, a public supply may be of greatest advantage from a sanitary point of view, as very often one of the greatest menaces to the health of the small community is the use of private wells. These wells when first dug yield water generally of good quality, but with increasing population they become more and more subject to contamination from surrounding privies, cesspools, barnyards, etc. Ordinary soil will for a long time produce a remarkable degree of purification in the water which reaches the wells from surface sources, but in time the soil becomes saturated with filth that sooner or later purification will no longer be complete.

Again, a public water supply renders possible modern indoor plumbing and the water carriage system of sewers. It is of course true that modern plumbing may be installed with a private water supply, but this is far more expensive to the individual than a public supply. Modern plumbing is not only a convenience but decidedly promotes healthfulness and cleanliness. The old fashioned privy vaults act as centres for the dissemination of disease germs by flies, more especially fever, and, as already noted, pollute the soil and endanger nearby wells.

The most striking advantage to be obtained from a public water supply is the fire protection it affords, and is the advantage that most strongly appeals to the taxpayers. In most instances the reduction in fire insurance rates is sufficient to meet the increase in tax rates due to the construction of waterworks. Of real advantage also is the increased beauty and cleanliness of a community brought about by lawn sprinkling and street flushing made possible only by a public water supply.

During the early rapid development of public water supplies the advantages thereof for fire protection, indoor plumbing and other purposes requiring large quantities of water were so manifest that quantity came to be considered the main desideratum. It was not until the seventies that the disease producing quality of drinking water was intelligently comprehended, because the germ theory of disease was not generally understood or accepted before that time. Previous to 1870 a few water supplies were filtered, but this was done primarily for the purpose of removing coarse impurities visible to the eye.

Without question the most preferable sources of supply for small communities are wells. Wells as a rule give the safest supplies and require the least precautions for the maintenance of their freedom from contamination. Well waters are not, however, without their dangers of contamination which must be guarded against. Well waters may be classified as follows:

1. Shallow dug or tubular wells in sand and gravel deposits.
2. Deep tubular wells in sand and gravel deposits.
3. Wells in sand and gravel deposits protected by superimposed impervious strata.
4. Shallow rock wells.
5. Deep rock wells protected by superimposed impervious strata.

Wells of the first group are generally located in the bottom lands of streams and derive their supply from river drift deposits, where these deposits do not exceed 40 or 50 feet in depth. These supplies, while generally of good quality, are subjected to certain dangers. For example, should the wells be located on a stream at the foot of the built-up portion of a town, the underdrainage of the town is apt to affect the wells injuriously. Nor may such wells be located within close proximity of sources of contamination in any direction because the heavy draft on public supply wells renders them liable to pollution from a wide radius.

Deep tubular wells in sand and gravel deposits, generally furnish quite a satisfactory supply, even though the surroundings of the wells are unfavorable. The advantage of going to a great depth in sand and gravel deposits is well illustrated by experience at Canal Dover, where the public supply wells are within 150 feet of dwellings having accompanying privies.

The wells, as orginally put down, extended to a depth of about 50 feet, and analyses of water from the wells at this depth showed marked evidence of polluting influences. In order to increase the yield the wells were later extended to a depth of about 90 feet, and samples of water drawn at this depth give exceptionally good analyses.

Wells from gravel deposits protected by a superimposed layer, nearly always yield water of good quality. A very remarkable formation of this character is found in the vicinity of Carthage where the wells penetrate first an unprotected stratum of water-bearing sand and gravel near the surface, then a thick layer of impervious clay and shale, and finally enter an abundantly water-bearing stratum of sand and gravel to which the wells are cased and from which the supply is drawn. A break occurring in the casing of one of the wells permitted water from the upper sand and gravel stratum to enter. The water from this upper stratum happened to have a distinct taste and odor, which was soon imparted to the whole supply and straightway gave rise to a storm of complaint. Analysis showed the water from the upper stratum to be decidedly polluted, no doubt due to the influence of nearby privies and other sources of contamination, while the water drawn from the lower stratum was of very good quality. When water from the lower strata is under artesian pressure, this may be taken as an indication of the imperviousness of the superimposed stratum.

Bad Water and Disease.

Wells deriving their supply from shallow depths in the rock, are perhaps the most dangerous of all for public supplies. The danger is especially great when the rock is limestone, for this rock under the solvent action of water may become honeycombed to such an extent that water may move rapidly to great distances without undergoing any purification such as obtains in the slower passage of water through the interstices of sand or gravel. Fortunately, there are no public supplies in Ohio derived from this class of wells, but the danger is forcibly illustrated by the experience of the small village of Rising Sun, in 1893. Throughout the greater part of this village the rock comes to within a very few feet of the surface of the ground. Numerous private wells secured their supply within the rock at rather shallow depths. Privies throughout the village were of crude construction and the fecal matter was ordinarily deposited directly on the surface of the ground or in shallow pits. There were also several abandoned stone quarries in the village, into which night soil was dumped. Health condition were not exceptionally bad until in the year 1893 typhoid fever was introduced and rapidly spread throughout the town, resulting in widespread sickness and many deaths. It is said that there was hardly a person in the village who was not to some degree affected. Water from similar shallow wells in rock near cesspools in Gibsonburg appeared on analysis to be derived from veritable nitre beds resulting from the decomposition of the cesspool contents. This water was perfectly clear and sparkling and most innocent in appearance.

Wells of the fifth and last group, extending to considerable depths in rocks protected by impervious strata, yield a water of generally satisfactory quality from a sanitary point of view, but the water is generally hard and at times so impregnated with minerals as to be unusable. Under certain conditions these wells are not altogether free from possible contamination. For example, water from near the surface may not be effectually cased off, or, as sometimes happens when private wells are affected by heavy pumping on the public supply wells, they are abandoned and subsequently used as convenient receptacles for household sewage.

Wells as above described have arbitrarily been grouped into well-defined classes, but it should be understood that there are numerous modifications of these classes and that sometimes peculiar and unusual cases arise.

Next to wells, in importance and desirability as sources of public water supply for small communities, are springs. Spring supplies may be of good quality, but in general, owing to the shallow depth from which water is derived, it is necessary that the watershed above be amply protected against contamination.

When wells or springs are not available, some form of surface supply must be resorted to. The development of a surface supply in a manner to avoid contamination is generally a costly proposition. In the case of supplies from Lake Erie it is necessary to extend intakes out to such distances that ordinarily filtration of the supply with a moderate length of intake is found cheaper.

In the case of waters drawn from streams without filtration, the supply cannot be considered safe unless absolute control is had over the entire watershed. In order that this may be accomplished by the smaller communities, it is generally found necessary to impound the waters of some small stream having a watershed of but a few square miles in area. Even under such circumstances the water supply is not absolutely safe, since it is subjected to intermittent pollution, which the most vigilant patrol cannot detect. In support of this statement, reference need only be made to the Plymouth (Pa.) epidemic of typhoid fever in 1885, caused by the discharges of a single typhoid patient deposited on the watershed and washed by a sudden thaw into one of the reservoirs. The result was 1,104 cases out of a small population of 8,000 and 114 deaths.

Surface supplies may, of course, unless grossly polluted, be rendered safe by filtration, but it is questionable whether this is always feasible or advisable. Successful filtration is dependent on intelligent and conscientious operation, and control over the operation should be maintained by frequent bacterial and chemical analyses of raw and filtered water. It may be safely said that in communities of less than

10,000 population, such operation is very difficult to obtain, and it would therefore seem advisable in small communities to consider filtration only as a last resort. This objection to filtration is more a practical than a theoretical one, for it is quite possible to build a highly efficient plant for even the smallest community; but as a matter of experience, it appears that the smaller the community the more crudely is the filter plant built and the more unintelligent is the operation.

Very common mistakes in small communities are the use of too small mains—nothing less than six-inch pipe should be laid—and the allowance of insufficient storage capacity. These defects are generally prompted by lack of funds, but nevertheless are not altogether excusable.

Instaling Water Supplies.

After a degree of sentiment in favor of a public water supply has been aroused, those in authority should engage the services of a competent consulting engineer; not one who offers the lowest bid for his work or one who agrees to install the waterworks at the lowest figure, but one who is a specialist of recognized standing in the art of water supply development. He should be employed exactly on the same basis that a physician is employed; namely, because he can cure, not because he is cheap.

The engineer so employed should be instructed to study all available sources of water supply and report the most feasible proposition, with estimates of cost. Then the matter should be presented to the people, with access to all the facts and figures, and after a reasonable time has been allowed for the popular understanding of the project, a vote on a bond issue should be called.

If the bond issue is ratified, then the same or another competent engineer should be called in to design and construct the works. In communities where there is a regular village engineer, it is sometimes feasible for such person to prepare detailed plans and construct the works under the general supervision of a consulting engineer. The advantage of competent engineering advice cannot be overestimated.

A brief contrast may be drawn between the community without a good water supply and the community with a good water supply. In the first instance, we have numerous private wells, often expensive to construct and liable to contamination. The water must be pumped by hand and carried to all parts of the house, or a private waterworks must be installed at considerable expense. There are the outdoor privy vaults, with all their attendant inconveniences and dangers to health. The community is practically unprotected against disastrous fires. In summer time the streets become dusty and lawns and gardens become withered and unsightly.

On the other hand is the community with the good water supply. Here, at a very reasonable per capita cost, there is available an abundant supply of water on every floor of every house. The insanitary privy vault may be abandoned and the people enjoy the luxury of modern plumbing and the cleanliness and healthfulness that it promotes. An extensive conflagration is impossible and the fire insurance rates are reduced. With properly constructed water works this reduction is often sufficient to neutralize the increased taxes incident to the installation of the works. Lawns and gardens are always green and streets may be kept clean and free from dust.

The important points to be remembered, if the full benefits of a public water supply are to be realized, are to build well and with an eye to the future, and, above all, make sure that the supply is of unquestionable quality from a sanitary point of view.

Problem of Sanitation in Towns and Cities

Brief Criticism by T. Aird Murray, of Septic Tank and Other Methods—Land Treatment of Sewage—Principles of the Biological System.

Sewage and water purification have, during the last 50 years, passed through an evolutionary period. The two subjects are closely related. Sewage contamination to a large extent provides the most objectionable impurities usually found in water. There are certain diseases which are recognized as capable of being water borne; such as typhoid, dysentery, cholera, etc. On the other hand, there may be impurities connected with water which are organic and may have nothing to do with sewage contamination. Two distinct public duties are now recognized in order to guard health from the evils of impure water; one, prevention in the first instance, or the guarding of water supply sources from pollution; and the other in taking proper measures to remove and counteract any pollution, either organic or inorganic, in the water before serving it out to the public.

Full of Organisms.

The problem of prevention comprises the subject of efficient sewage disposal. Wherever one or more persons locate, sewage is a necessary product.

Domestic sewage, as well as containing effete poisonous organic matters, is charged with innumerable microscopic organisms to the number of from 30 to 40 million per thimbleful or cubic centimeter. Many of these organisms are known to be harmful, and are the effective carriers of the infection of disease.

Canada in one respect is in a fortunate position inasmuch as it can profit by the experiences of other countries and the great amount of experimental and research work done.

Many old pre-conceived theories with reference to sewage disposal have received their deathblow. Chief among these is the well known and well advertised septic tank.

At one time, advocates of the septic tank held that it solved the sludge question, inasmuch as all the organic solids were digested by putrefaction. The Royal Commission, by extensive experiment at the parent septic tank installation at Exeter, have shown that not more than 25 per cent. of the sludge is thus got rid of, while other authorities put the putrefaction elimination as low as 6 per cent.

It was also held that zymotic germs were killed by septic action. Nothing of the kind happens. The effluent from a septic tank is bacteriologically as impure as the sewage entering it.

The germs are changed into putrescible inorganic forms by a process of nitrification, by which organic nitrogen is oxidized to nitrates and nitrites. This is the natural process which takes place in soils, by which organic effete matter is rendered into forms suitable for the rebuilding of plant life.

Land Treatment of Sewage.

The process of nitrification is connected with the presence of oxygen and micro-organisms and may take place either in ordinary soil or in specially designed biological filter beds.

By allowing sewage to run over land of an open and friable nature, the sewage gradually percolates into the sand, the organic matter is absorbed by the soil in the upper layers and is then gradually oxidized or nitrified.

"Broad irrigation" and "intermittent filtration" are the two recognized methods of land treatment.

Broad irrigation simply means using the sewage for irrigation purposes on crop lands and distributing it by means of ridges and furrows. Intermittent filtration means the employment of land devoted solely to sewage disposal apart

from any crop consideration, the land being divided into lots, which alternately receive a dose of sewage, thus giving time for the liquid to pass out of the soil pores, for the admission of oxygen, higher nitrificat, and a possible maintenance of equilibrium as between retention and oxidation.

When land is resorted to as the purification medium, the system of intermittent filtration provides the greatest measure of success. The continued success depends, however, entirely on the suitability of the land.

The Biological System.

Hence the biological system of sewage purification. This system makes sewage purification independent of the character of the land; all that is required is a solid base on which to build simple structures, ideal homes built for the propagation and maintenance of the nitrifying and other organisms, homes or filter beds, if you like to so call them, in which under proper conditions and management the equilibrium between retention, absorption and oxidation can be successfully maintained.

Any degree of purification required can be obtained. It is, however, a question of reasonable purification and of cost.

The success of the system depends upon the following essential features:

(a) Preliminary treatment for removal of as much of the solids from the sewage as possible.

(b) Secondary treatment of passing the sewage through filtering media about walnut size. The depth of the media should not be less than 3 feet, and it is unnecessary to have it more than 8 feet.

Such a biological system will so chemically change any ordinary sewage that it is no longer sewage. The effluent will be non-putrescible.

The biological method or the land intermittent filtration process will greatly greatly reduce the number of B. Coli. and other bacteria.

A further reduction is effected by the retention of organic solids in suspension and organic solids in solution absorbed in the filter to the amount of about 85 per cent. of the number entering the filter. So large, however, is the original bacterial count, that the resultant percentage is still in a proportion to render the non-putrescible effluent unsafe for dietetic purposes unless mixed with a large volume of pure water. The life of the resultant bacteria, an effluent practically free from organic matter and thoroughly oxidized, is very short.

It therefore cannot be denied that although it is absurd to speak of nitrified sewage as potable water, a great and beneficial work is accomplished.

This nitrified and non-putrescible sewage effluent can be rendered practically sterile if required. The process, however, is in most cases unnecessary.

Arrangement of Piping for Heating Greenhouses

"Phoenix," in Domestic Engineering, Discusses the Relative Merits of Hot Water and Steam in Greenhouse Heating—Bottom Heat Preferred to Overhead Piping.

Many opinions exist to-day as to the proper arrangement of the piping used in heating greenhouses, and also as to the relative merits of hot water and steam when used for this purpose.

Some authors state that on certain classes of work little or no bottom heat is desired, while in other cases only top heat is used.

The reason was not given, so the writer of this article started some investigations of his own and visited several well-known greenhouses which were being conducted successfully and the following is the result:

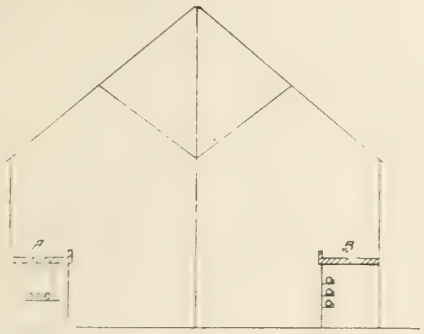


Fig. 1.—Hotwater Pipes Under Benches.

First. Hot water heat seemed to have the preference in the smaller houses, by far the greater number of commercial houses being so heated. These houses make a business of raising products for quick sales.

Second. In these particular greenhouses, the pipes were run under the benches, as shown in Fig. 1, under letter A, producing what is called bottom heat.

No pipes were run overhead between the glass roof and the growing vegetation.

One of the gardeners in attendance when asked the reason for this state of affairs, said that "when you want to force the growth, the heat should come from below and that the overhead heat was neither desirable nor necessary."

Third. The writer did not find a single greenhouse having what might be called a complete overhead system of heating.

One system visited is said to contain nearly two million square feet of glass. This village of greenhouses covers some twenty-five acres of ground and has several independent low-pressure steam heating systems, some twenty to twenty-four greenhouses being connected to each boiler. The condensation is returned to these boilers by steam tilting traps, two to each boiler. The condensation is first run into a receiving tank and from that to the lower trap by the side of the boiler. This trap elevates the condensation to the trap located over the boiler, which fills, tilts and discharges its contents into the boiler.

This is at least one instance of steam traps being successfully used in greenhouses in disposing of the question of the location of the radiation as regards the water level. This twenty-five-acre field of greenhouses makes a business of raising flowers, mostly, for the market. "To be sure," said one of the attendants, "we have two or three acres of asparagus under glass."

The bottom system of heat was used in nearly all of the houses in this immense plant, the coils being constructed mainly of 1¼ pipe.

Another very large system visited had huge curvilinear roofs, the highest point being probably over forty feet from the ground. These greenhouses were heated by a patented low-pressure vacuum system and the boiler was located at quite a distance. Some rooms had steam pipes under the benches, as shown in figure 1A. And in other rooms the steam pipes were arranged as shown in figure 2.

These coils were all built of 2-inch pipe.

Somewhere I have seen a statement which I quote from memory. "The boiler is the heart of the heating apparatus."

Possibly this may be true, but if so

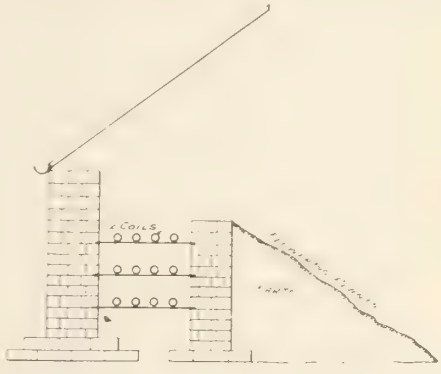


Fig. 2.—Steam Coils in Passage Around Building.

then there are a mighty lot of defective and crippled extremities "hooked up" to that heating heart.

Nearly any old boiler can be crowded into furnishing enough heat to squeeze along on; but the best boiler on the

market may be seriously crippled through defective piping or insufficient radiation.

The writer believes that hot water pipes arranged side by side, as shown in Fig. 1A, will be found more effective than when arranged vertically, as shown in Fig. 1B, when hot water is used.

The reason for this is that in an open tank hot water system the flow of the hottest water would tend to go to the upper pipes first, and possibly the lower pipes might heat very little, or not at all.

Many people have trouble in locating the boiler to secure the best results.

A pit is generally quite unsatisfactory because of the danger of water coming in and putting out the fire at undesirable periods. Likewise, the sunken boiler will not have as good a draft as it would if it had not been dropped. Question: If it is possible by means of any one of the many patented appliances on the market, to put a pressure of ten pounds on a hot water job and make it circulate more quickly, and with the radiators in almost any location, why are not more boilers set on the floor of a greenhouse, even though part of the boiler would be higher than the pipes running under the benches and pressure applied?

Another question: What is to hinder the same result being obtained with steam, and what are steam traps for?

Lest some one should say that the steam pressure would not be sufficient to operate the trap and return the condensation to the boiler it can be stated that five pounds of steam would be enough, generally, and that many greenhouses heated by steam carry more than this pressure, while there are traps advertised to operate on less than five pounds.

Owing to the large amount of glass surface used in buildings of this nature, and the poor construction which many times occurs, it is rather a difficult matter to give information as to the manner of accurately estimating the necessary amount of radiation, and any figures given must be tempered considerably with good "horse sense." The following table, which is reproduced from Carpenter's "Heating and Ventilating Buildings" will be found very useful and quite reliable. The use of this table for estimating is explained as follows:

Suppose that the greenhouse has 1,000 feet of glass surface and that it is desired to bring the heat up to 70 deg. in presumably zero weather. This would require some 200 feet of radiation with steam at 5 lbs. pressure. It will be seen that the division five was used to obtain this result. The same rule will work for obtaining radiation required at other temperatures. For instance, suppose that hot water used at 160 deg., the temperature of surrounding air being 60 deg., and that there was 3,000 square feet of glass in the greenhouse. Dividing by the required divisor 4, we find that 750 feet of radiation would be necessary.

A table which shows the amount of glass surface or its equivalent which may be heated by one square foot of radiating surface in good buildings:

	Hot water.			Steam.	
				5 lb	10 lb
Temp. of radiating surface, (deg.)	160	180	200	227	240
Temp. of sur'd'g air.	Sq. ft. of glass for 1 sq. ft. of radiating surface.				
90 deg. F.	1.9	2.3	2.8	3.3	3.8
80 deg. F.	2.3	2.9	3.5	4.0	4.6
70 deg. F.	3.0	3.6	4.2	5.0	5.7
60 deg. F.	4.0	4.6	5.25	6.0	7.0
50 deg. F.	5.0	6.0	6.8	8.0	9.0
40 deg. F.	6.9	8.0	8.2	10.0	11.5

DONOVAN CANISTER BATH TRAP.

J. J. Donovan, Plumbing Inspector of Boston, Mass., has patented a canister bath trap suitable for bath tubs or fixtures where it is desirable to place the trap below the floor.

The trap is of open formation enclosed in a copper canister which sets below the floor and has a neat nickel-plated brass or enameled plate which covers the opening through which it is reached. The trap is of heavy cast brass and is composed of two elbows, which are attached to the canister and turn downward to meet the other part which is in one piece and is drawn up to elbows by means of a crossbar and nut. To clean the trap or waste pipe to or from the trap at any distance, all that is necessary is to remove the lower part when the elbows can easily be removed, giving full and easy access to the waste pipes.

A feature that will appeal to the plumber is that there are no washers to keep in stock. The lower part draws up to elbows with ground joints made up with grease and the elbows are made into the side of canister with tapered threads. The bearing on the ground joints is insured by the guides on elbows into which the crossbar must be placed. A satisfaction the plumber has in dealing with this trap is the security it affords against wetting a ceiling when cleaning out the trap.

The inventor has shown by the unique method in which he overcomes all the objectionable features of the side screw round trap that he is thoroughly familiar with the needs of the trade and possesses the mechanical ingenuity to develop traps which have merit and which a plumber can consistently advocate.

These traps are now being used very extensively around Boston by plumbers who know their superior merit. They are self scouring, have ground joints under water and a seal of 3½ inches which provides for evaporation, back pressure or syphonic action. F. N. McIntire, 130 Oliver street, Boston, Mass., offers to send full information, discounts, etc., to any one in the trade. It is probable that the manufacturing right for Canada will be sold and the traps made in this country to supply the Canadian trade.

W. S. RAYNOR, ST. THOMAS,
Ready to Start Out From His Shop to Hustle Business.

HAD SUCCESSFUL YEAR.

The King Radiator Co., Toronto, had their annual meeting at Toronto last week and the report of the officers showed the company to be right up with the leaders in the heating business. During the first and second years of its existence many experiments and changes had to be made, but the concern is now well organized both in the producing and sales ends.

R. P. Gough was elected president, R. W. Harrison, vice-president, R. J. Cluff, managing director, and Thomas Southworth, M. J. O'Brien, J. C. King and R. Y. Eaton, directors.

S. W. Howard, formerly secretary of the company, and who for the past year has been sales representative of the United States Heater Co., Detroit, in Indiana, Ohio, Kentucky and other states, has re-joined the King Radiator Co.'s staff, becoming sec.-treas.

T. L. Peck & Co., Vancouver, have been appointed sales representatives for the company in British Columbia.

Hints for Those Who Would be Plumbers

Suggestions for the Apprentice —Use the Eyes More Freely Than the Mouth—Don't Make the Same Mistake Twice—Keep Doing Something—Clean up When Not Engaged in Other Work.

Written for Plumber and Steamfitter by Charles H. Denison.

When a boy starts out to learn the plumbing or heating trade there are various points which would, if he but knows them, make the work very much easier not only for himself, but for all concerned.

The apprentice should acquire the habit of using his eyes instead of his tongue. There is nothing that will annoy a workman to a greater extent and render him "crusty" than to be subjected to a lot of fool questions by a boy of from sixteen to eighteen years of age. And from their very ignorance of the business the ordinary lad will, of course, ask many extremely ridiculous questions. Therefore the youth should as soon as possible acquire the habit of talking little and of observing much.

Do not object or argue or try to be witty and smart when your boss directs you to do any certain task. Either attempt to do what he says or else get out. Make a start anyway and let him see that your "intentions" were good even though the work you do may be of a very poor quality. The spirit manifested counts for something in this game.

It matters little whether or not you have ever done such a piece of work, be game enough to make the attempt. Have some common sense on tap and endeavor to adapt yourself to the circumstances and the road will be much easier for so doing; otherwise some severe "bumps" will be coming your way which will shake you up a bit when least expected.

All journeymen are not cranks and many like to explain various points of the trade, but as a rule they like to do it when they are in the notion. In school our information is acquired generally by the study of books or perhaps drilled into the head of the pupil until his mind becomes a maze of doubts. In the shop the knowledge is obtained by doing and seeing different jobs performed day by day.

Learn by Experience.

Therefore do whatever task comes your way in the best manner in which it can be performed by yourself and if you "fall down" at first, endeavor not to make the same mistake again. Even the best plumbers make mistakes. That is not what the boss objects to so much but it does make him "grouchy" to see the same thing done incorrectly day after day and it ends up with the offending party's getting "fired."

However, now and then, a question must be asked and when this is the case let it be brief and to the point. Many a good boy has been let go simply because he did not know how to act when "on the job" or at the shop. The key to matters is to keep busy about something as long as there is anything to be done and you take it from me that there is nearly always something that could be done in the average shop if you keep your eye skinned. There are the tools which can be wiped up and put in order; fittings are out of place, the bench and floor all littered up and if one will use their eyes, about one hundred other things can be seen which will keep some one busy for quite a spell of time. Therefore when nothing else offers, get busy about the shop. The place for these various tools and fittings can be found by a little observation. Probably the different bins or boxes will be marked with the names and sizes of the fittings. Look these over and you can learn what a "tee" an "ell" and a "cross" is without asking any questions at all. The names of many other fittings besides those mentioned may be learned after the same fashion. Try to remember the place where each fitting belongs, for this will be useful to you as long as you may work in that same shop.

Proceeding along such lines it will be but a short time before the location of nearly everything in the shop will be known.

Help the Journeyman.

When out "upon the job" it is a mighty poor plan to allow the plumber to do all the work. Some plumbers will do this sooner than bother with telling the boy what to do. Here is the place to again make use of one's eye and endeavor to help matters along by "getting busy." In a repair job, locate the cut off in the basement and turn it off. If its a case of repairs to a water front the fire will, in all probability, have to be pulled in the range. Do so and be careful not to mess up the kitchen in so doing, thus making it necessary for the plumber to square affairs with the cook.

The overalls should be kept reasonably clean and when waiting on the plumber do not lean against the wall of the room and strike an attitude by placing one hand on the hip while the other rests upon the wall leaving a true "black hand" reminder. Unnecessary noise should also be avoided. One need not turn the house into an amateur boiler factory in order to get the work accomplished. Now I suppose that many a plumber would consider it beneath his dignity to call for a broom and sweep up the coarsest of the litter he has created yet I have known of several such in the course of my travels and wherever this was done, the housekeeper always called for that particular workman whenever there was any repairs to be made at her house, and these frequent calls for the same man had the effect of making the boss get wise to the fact that he had a man working for him whom it would be well to hang on to, even if he paid out a few dollars extra during "slack" times.

A Good Trade to Learn.

Our business is an honorable one and entirely legitimate. It is creative and not destructive. There is not a better trade on the green earth for a lad to acquire to-day.

The wages paid are large, the investment in tools small and the hours of labor not excessive.

Therefore when one has decided to acquire this craft go to it with a will and get it thoroughly from start to finish. Instead of considering it as a means of living make it your business in life. There is a difference to-day between the plumbers' trade and the plumbing business. The plumbing business is rapidly coming to the front and taking the position to which it is justly entitled in the run of events. Do everything possible to make the word "plumber" represent an honorable man who will be a credit to the community and looked upon with respect by his associates.

Laws are being passed from year to year which are raising the standard of the mechanical branch of the craft. In many places it is now impossible to work without a license. Those who can't pass the examination must either fit themselves or shovel dirt.

This is, and will continue to raise the standard of workmanship and intelligence in the craft, but aside from all this there yet remain the standards of honor and justice which, if allowed to deteriorate will have the effect of giving us a class of grafters in the business. Therefore play "on the square" in all matters of both business and private life. I'd sooner be called a called a "crank" than a "crook."

Business Competition and the Profits of the Plumber

Practical Suggestions on Running a Plumbing Business Given in an Address by John A. Brooks Before the Ohio Master Plumbers' Association.

I really think the downfall of the master plumber is lack of system. I think that every master plumber ought to put more system in his business, and am mentioning this at this time on account of the keen competition that we come in contact with in our contract business.

It would, indeed, be a very slack business man that did not keep a record of what people owed him, and it would be almost as slack to fail to keep a record of what he owed, and yet there is not one man in 50 in this trade who will keep records of transactions that he carries on during the course of his contract, and it is in the production of this work that the money is made or lost.

Right here at this point I would like to call your attention to the fact, why is it that the manufacturing firms of today are spending thousands of dollars employing men to look after the overhead expense of their business? And another thing to apply in our business to-day is that we are to do business in a business-like manner, or some one else will do business for us.

Organization in any trade is of value and benefit not alone to its members, but to the entire craft it represents. It is of value in promoting sociability and good-fellowship if nothing else. When, however, it can lay credit for evolving and carrying to a successful finish plans and operations that mean dollars and cents to its trade by clever legislation, bringing about a more desirable way for conducting one's business, then is organization a real lasting influence.

Value of Organization.

It takes the united effort of a combination of bright minds who willingly sacrifice a portion of their time to a consideration of the best way for remedying evils in their trade. Therefore, organization is of value, when composed of men of intelligence who will make the personal sacrifice in a general effort to promote better trade conditions, and devise remedies for existing evils.

Organization has also established keen competition among members. This is partly occasioned by the large number engaged in the business, and also by the very easy entrance into the business, which is a matter of fact, and has made an open gateway through the very parties who should have restricted it by the adoption of safe and sane business methods.

Competition is good and healthy, and is beneficial to all concerned, and is the life of trade. But we have been going along recently into a competition which when your bankroll is consulted has been proved unhealthy, and if we might use our trade expression, unsanitary.

One of the first items that should be complied with by all sane business men is the cost of running their business establishment. The cost in many pursuits is given in charge of the most competent men procurable; in other words, it is considered so important by reputable business concerns that one man in a large establishment who draws a yearly salary of $20,000, not only figures the cost of running the business, but puts a price on each article, after adding the running cost.

Just for example, there is one item for the cost of wagon, and repairing of same, automobile tires, the cost of repairing, the salaries of the bookkeeper, or office force, feeding the horse, telephone, rent, etc.

Don't Figure Overhead Expense.

We plumbers figure our business entirely differently. We are glad to get any size job at 10 per cent. profit which when whittled down to a plain business proposition of the cost of our telephones, wagon hire, bookkeeper and the time of the man who looks after yur work, adding the six per cent. that many of us pay when compelled to borrow money at our banks, results in a profit of nothing.

To verify this, look at the bank rolls of some of the brightest practical men in our business to-day; look up and down the line at the men who have been actively engaged in the plumbing business for the past 5 years, and the speaker challenges the production of 50 per cent. of the entire trade in this state who can show $25,000, or $1,000 a year for each year they have been in business. The speaker does not make this statement in any sense to boast or threat, nor is he at all pleased with his own cash account.

This condition should not be, and it is not too late to change the condition. A close application of the laws of human nature, as applied to everyday life, might result in your looking out for yourself first, by looking after the other fellow; do not take work at any one else's figures, architects, owners or builders, that give you a chance to meet the lowest man's figure. You don't call that a preference, do you? Surely that man is not a good business friend. And do not let the glamor of beating another man at his own price, mind you, lead you to forgetfulness of your business education, which should have taught you that your business costs you something to run, that you should get more per cent. than the man working for you, and that one of the items of every contract that you assume should bear the item of cost of running your business.

Must Know all Costs.

Overhead expense can be found in but one way, and that is by distributing the expenditures so as to make it possible each month to find the percentage of expense to labor. It is labor that creates an overhead expense, not merchandise.

In contract work there are three distinct kinds of cost to be considered; the material cost, the labor cost, and the general expense.

The material cost of a contract is estimated by taking from the plans what is required. Then an estimate is made of the labor required to put this material in place. The next step in finding the cost is one which I think is unknown to almost every man in the trade, and that is general expense that should be charged to the job. The cost of doing business is great, in fact, so great that many contracts thought to be done at a profit are done at a loss, because no allowance was made for expense.

It does not cost any more to install an expensive article than it does to install a cheap article as a rule. For that reason I cannot understand why running expense can be charged to merchandise, because your merchandise account varies where your labor account does not so much. Merchandise ought to be sold for profit only.

If a man sells one dollar's worth of labor on a contract, it costs a certain proportion of expense to sell this labor, and it ought to be represented in every contract that he does. This general expense can be very easily found by dividing the total expense of the month by the total amount of labor paid out for the month.

I would be very much pleased to show this system, and demonstrate it personally to any one of my brother members,

Questions and Answers in Heating and Plumbing

Inquiries Solicited From Readers, Who Run Across Problems Which are Unusual—Just as You are Interested in Reading the Questions Asked by Another Man in Your Trade, so Will the Other Fellow be interested in Your Problems — Send the Queries Along and We'll Answer Them—or try to.

PLUMBING GOODS BY MAIL.

Editor Plumber and Steamfitter,—Though not a plumber or steamfitter, I should like to ask your advice upon a question. The other day I got a catalogue from a mail order house and they seem to offer plumbing and heating material much cheaper than the plumber in my town quotes it.

Would you advise we to invest and save money, and have you any experience to quote to show that I should not?

A. DICKUS.

Oakville, April 5.

We presume that our friend has been sending for catalogues in order to get posted. If so, he has taken a very poor means as he can readily ascertain by spending a very few dollars in buying some of the standard books written by men who are authorities upon the subjects they handle, and for sale by the book department of The Plumber and Steamfitter. If he would invest a few dollars he could then make comparisons and very soon find out where he was at. He would probably have to pay for his goods before they were ever removed from the railway freight house. The goods might be satisfactory, and again they might not. In several cases we know of they were not. Who is going to keep up the repairs? Would you have nerve enough to approach your town plumber and ask his assistance? We strongly advise you to patronize a plumber who lives in your town. If he can't make good, get some one from an adjoining town, but don't try to do the job yourself.

THE PLUMBING JOB "HAMMERS."

Editor Plumber and Steamfitter,—In one house here there seems to be a report as if some one had hit the pipes with a hammer every time a faucet is opened and shut quickly. Can you tell me the true cause, and how to remedy same?

ENQUIRER.

Oshawa, April 9.

Look the job over and see if air chambers have been put on. Probably fuller faucets are used and no "chambers" used. These should be applied as soon as possible and the trouble will probably be overcome. If not, write us.

HOW MUCH DOES WATER EXPAND?

Editor Plumber and Steamfitter,—Can you tell me how much the expansion is when water is turned to steam?

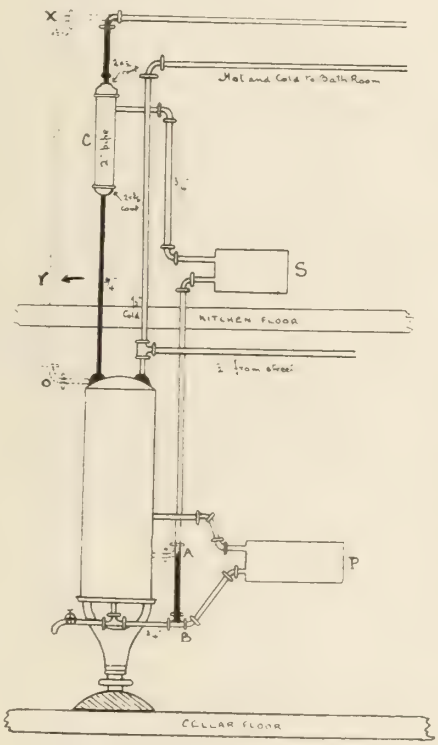
D. C.

Regina, April 2.

The expansion is nearly 1700 times. In other words, one cubic inch of water, when changed into steam, will occupy nearly 1,700 cubic inches of space in the boiler, pipes or radiators.

RANGE BOILER CONNECTIONS.

Editor Plumber and Steamfitter.—I enclose a rough sketch of two water fronts connected to one 30-gallon boiler, which is placed in laundry close to laundry stove, the cooking stove being straight above it. We all know it would be better for the boiler to be up-stairs,



Range Boiler Connections.

but in this case it must go as shown. I want the best results and would like to receive some suggestions as to how I can improve the job.

A. O. G.

Newmarket, April 7.

We would tap separately into lower range boiler at point A, as shown in dotted lines, and not connect at B, as shown in A. O. G.'s sketch. We see no use for the extra reservoir shown by A. O. G. at point C. The straight ¾-in. pipe, shown in dotted lines, would do the job fully as well. The vertical distance from X to Y will have to be at least equal to that vertical distance shown by Y to O. Otherwise waterback S will not heat the tank, while waterback P always should. It would be better to have line X to Y two or three feet longer than Y to O.

GASLIGHT INVENTION.

The Bec Economique Galile gaslights invented by M. Galile, of Nancy, France, are enjoying a large sale in that country owing to their inexpensive operation. While the invention is patented in Europe and the United States, the lamps are not yet manufactured in the latter country. It would therefore seem that American manufacturers of gaslights would be greatly interested in this new invention and would find ready sale for the lights.

A number of different models of these lights were on display at the Exposition d'Alimentation, recently held at Paris, where they attracted much attention. A gold medal was secured for one of the lights at the Exposition de Nancy the past summer. The lamp proper is of medium size and may be attached to an ordinary gas fitting. Instead of having a mantle suspended from the gas-burner, as with the ordinary gaslight, the pastille is placed upon a perpendicular metal bar which is placed parallel to the gas feeder, the latter being bent and pointing toward the pastille at right angles. The feeder is perforated and may be shifted back and forth at will according to the amount of gas one desires to employ. The pastille, instead of being cone shaped, is a disk about one-fourth inch in diameter and is stretched across a tiny metal frame. The feeder is operated by a thumbscrew. A disk will wear five or six months, and they may be purchased at 40 cents per dozen. The small amount of gas consumed by this light is the special attractive feature, five liters being sufficient for one hour's use. At this rate the expense of the light would be reduced to a minimum of one-fifth of one cent for 12 hours. The light casts a soft white light, and while not especially intensive is of a sufficient brilliancy for a hall stairway, telephone booth, lavatory, or place where a strong light is not needed. Without the globe this light retails locally at 6.5 francs ($1.25). It is said to be perfectly safe and odorless, and always ready for use.

The other light to which reference is made, the Bec Combine Galile, has an ordinary large mantle in addition to the disk referred to, and produces a much stronger light when both pastilles or only the larger one is in use. If desired only one at a time may be used. This lamp is designed for kitchen

use, hotel offices, and other places where a continued light is unnecessary. It is also very inexpensive. The regular price without the globe is $1.65, with an additional 10 cents for the globe. This light was invented only a few months ago and is apparently not known in the United States.

Gossip of the Plumbing and Heating Trade

Items Gathered in all Parts of Canada—Letters Invited From Subscribers, Giving Particulars Regarding Changes in Firm Names, Contracts Secured, Novel Methods of Advertising or Other News—Photos of Anyone or Anything Connected With the Trade Also Welcomed.

Maxwell & Hume are opening a tinsmithing business at Edmonton.

Whimster & Co., Fernie, B.C., have closed their plumbing business at that place.

Coruful & Frost have opened a plumbing and tinsmithing business at Strathmore, Alta.

Plumbing Inspector Morgan, of Vancouver, has appointed Mr. Zimmer, as his assistant.

The Ville Marie Plumbing Co., Montreal, are offering to settle with their creditors at 50 cents on the dollar.

W. F. Bray, tinsmith, Pugwash, N.S., sustained a loss through fire in his premises, and has discontinued his business.

E. Fawcett, Wawanesa, Man., has accepted a position as tinsmith in L. H. Phillips' hardware store, Cartwright, Man.

Adam Clarke & Son, Hamilton, have been awarded the contract for plumbing at the new lavatory in the House of Refuge there at $461.

L. K. Markey, general sales agent of the Ideal Mfg. Co., Detroit, was a caller at the Toronto office of The Plumber and Steamfitter this week.

John Lemmon, Jr., late of Elliot Bros'. plumbing department, Kingston, has opened a plumbing and steamfitting business in that city.

J. B. Furniss, Sunderland, Ont., is offering his tinsmithing and hardware business for sale, intending to look after some interests he has in Western Canada.

A. J. Armstrong, plumber and tinsmith, St. Catharines, is gradually recovering from the effects of the injuries sustained some weeks ago by a fall from the rectory roof.

Wm. Noble, of Noble & Rich, London, a noble in Mocha Temple, Mystic Shriners, left on April 9 to attend the Imperial Council of the Shriners at New Orleans this week.

C. N. Borton has purchased the tinsmithing, plumbing and heating business from the Summerland, B.C., Supply Co. Mr. Borton has been connected with the business for a long time.

Toronto plumbers and steamfitters are said to be quietly strengthening their organization. They contemplate an arrangement with the employers, whereby a higher rate of wages will be obtained.

The Belleville Brass Goods Co. are changing their name to the Springer Lock Mfg. Co. The reorganized company will be under the management of W. C. Springer. A new foundry building will be erected.

T. I. Thomson, Limited, Owen Sound, have secured the contract for the plumbing and heating work in the new Methodist Church in that city. The heating is to be a steam job with 2,588 feet of radiation. The contract price for the heating and plumbing amounts to $3,200.

Harry Sidney, formally with Christie Bros. & Co., Owen Sound, is removing to Vancouver, where he will join the firm of Atkins Bros. & Co. Mr. Sidney has been head of the plumbing, steamfitting and sheet metal work departments since the incorporation of Christie Bros. in 1902. Mr. Sidney was awarded a first-class diploma for plumbing at the New York Trade Schools in 1890.

A. L. Davies, a Toronto plumber, is suing Wm. McMillan of that city for work done in the latter's hotel in the fall of 1909. The defence admit the work being done, but say the bill is too high.

A. R. Fraser, who was recently a member of the hardware firm of Zobel & Fraser, Winnipeg, has purchased a stock of goods and will open a plumbing and heating business at Weyburn, Sask.

W. G. Downs, recently with the National Plumbing Supply Co., Toronto, has succeeded M. A. Villeneuve, as salesman for the Ideal Mfg. Co., Detroit, in the district between Toronto and Quebec.

H. Cordeau, for many years with the Rock Island Hardware Co., Stanstead, Que., has left the employ of that concern to become the partner of E. C. Hall, in an enlargement of the latter's present tinsmithing, plumbing and steamfitting business.

Vancouver master plumbers have acceded to the request of the union journeymen plumbers, and have increased the wages from a minimum of $4 to $5 a day. This increase applies only to union shops, open shops are still running under the former conditions.

Arthur L. Davies, plumber, Toronto, is suing Wm. McMillan, hotelkeeper, for work done in the Aberdeen Hotel, in the fall of 1909. The bill sued on was originally $436.18, but the defendant had reduced it $100. He is suing for the balance with interest since February 8, 1910.

An Ontario charter has been granted to Wm. G. Colville, Jos. A. Fife, Fort William; and A. T. Fife, Kenora, to incorporate the W. G. Colville Co., Ltd., to purchase, manufacture and sell plumbing, heating, engineering, gas and electrical goods. The capital is $40,000, and headquarters will be at Fort William.

Francis I. Lessard, J. E. Cardinal, J. E. Lecomte, A. A. Plante and Cyrille Bertrand, all of Montreal, have formed a company, which has been incorporated by the Dominion Government, under the title "Lessard Co., Ltd.," to acquire, manufacture and sell plumbers' supplies, etc. The capital is placed at $50,000. Mr. Lessard is a master plumber and Mr. Bertrand a tinsmith. The others have no present connection with the plumbing business.

The James Robertson Co.'s Toronto traveling staff is shorthanded this week as Mr. and Mrs. W. H. Sheppard, Mr. and Mrs. George McQuillan, and J. R. Foster are in New York, being members of the St. Patrick Chapter, Royal Arch MasonsExcursion party who are visiting the Ancient Chapter at New York, where the Canadians are to be banqueted and there is to be an exemplification of degrees. Mrs. C. H. Beavis and daughter, Toronto, were also members of the party.

As intimated some time ago, a demand for an increase of wages, from $4.50 to $5 a day, has been made by Vancouver journeymen plumbers. Employers realize that under existing conditions the demand was not altogether unreasonable, and the request has been granted in nearly every instance. Business is good, and with an amicable settlement thus arrived at, there will be no tie up in the coast city this spring. The open shops are still running along under former conditions.

R. Hinrichs, who formerly looked after the Gurney Foundry Co.'s interests between Brantford and the Detroit river,

has been appointed manager for that company in Alberta, with headquarters at Calgary. D .W. Rose, formerly of Van-Tuyl & Fairbanks, Petrolia, succeeds Mr. Hinrichs on the road in Western Ontario.

At a special recent meeting of the Winnipeg city council, E. L. Barnes, representative of the American District Heating company, discussed with the members of the council and of the board of trade and commercial bureau the probable cost of a municipal heating plant, and it is expected that the company will install one in the near future.

R. A. Townley, for eight years Plumbing Inspector of Vancouver, and his assistant for four years, R. Harper, on their retiring from the city's service, were each presented by the members of the office staff with a handsome signet ring, accompanied by an address signed by each member of the staff, testifying to the regret felt at their leaving the city employ, and whishing them every success in the business partnership upon which they have embarked.

MacGregor & Reid, Peterboro, have been successful in securing several large contracts in Toronto, as well as the plumbing, heating and wiring of a large apartment house, the heating of a ten-story office building, and the heating of the county buildings in their home town. Owing to the large contracts in Toronto Mr. MacGregor will reside there after May 1, but he will also supervise contracts in Peterboro.

The hardware, heating and plumbing business which has been conducted for a number of years at Goderich by J. H. Worsell & Son was taken over last week by Fred. Hunt, of Chicago, who recently purchased it. Mr. Hunt has been connected for eighteen years with T. J. Gilmore, of Chicago, plumbers and heating experts. He acted as their foreman for the past seven years and is highly recommended as a first-class tradesman. He is an old Goderich boy.

The counsel of the Winnipeg plumbers' union, who has just returned from London Eng., after getting the worst of it in the Privy Council on the right of a union to picket during a strike, gives it as his emphatic opinion that the union lost its case owing to its inability to produce the necessary records when the action was first called, thereby making it impossible to learn who was actually responsible for the strike and for the administration of the union's affairs. Unfortunately for the union, however, the Privy Council took the view that if any body of men purposely destroyed their union records they must have some thing to c ncea', which entitled them to little consideration. And it was this view that resulted in the prompt decision of the Privy Council to refuse the right of appeal.

W. J. Graham, the Montreal plumbing contractor who did the work in connection with No. 5 Fire Station there and who for the past three years has been unable to secure payment for certain extras which he was instructed to make by the architect, will be paid if the recommendation of the City Attorneys be followed. At a late meeting of the Board of Control, a communication was read from the Law Office advising that the account be settfiled. Mr. Graham asked for $2,078.74 ; the law department after going over the account, is of the opinion that the Board should pay $1,830, $1,700 being for the work itself and $130 being for lawyers fees paid by Mr. Graham in attempting to secure payment. The Controllers did not take any definite action on the report but, it is assumed that they will follow the recommendation of the City Attorneys.

London Plumbers Heading for the Duke of York Hotel on All Fools Day.

AN APRIL FOOL JOKE.

The proprietor of the Duke of York hotel, on Dundas Street east, London, must have thought the plumbers of London were a thirsty lot on April 1, as one by one they hunted him up and asked for the job of repairing a beer pump, putting in a heating system or remodelling the plumbing arrangements of the building.

Some came on street cars, some on delivering wagons, some walked and, as will be seen in the accompanying sketch taken by Plumber and Steamfitter's special artist on the job, one trundled a wheelbarrow loaded with tools and repair equipment. They all came in response to telephone messages, and the telephone company got some extra revenue out of the joke as "Shorty" and others, in phoning back to headquarters to ask if there had been a mistake, used the pay phone and the price of a beer had to be put in the slot to get the connection.

There were all sorts and conditions of plumbers. Some were heads of businesses, others were foremen for large firms, some were journeymen and others were tinsmiths. But they were all looking for "Mine Host" of the Duke of York, who had his troubles standing off the men who said they had been told he wanted some work done. At last he tumbled to the April fool game and passed the cigars but some were feeling too sore to smoke.

Somebody will get stung next April fool day if the plans of a couple of the boys do not miscarry.

ACCEPTED A BETTER JOB.

Thomas Watson, plumbing inspector, Fort William has resigned to accept a similar position at Edmonton at about double the salary he was receiving. "Fort William is losing a most capable and conscientious official," said Alex. Cameron, of Fort William, to The Plumber and Steamfitter in Toronto this week.

GAS FROM PEAT.

An interesting demonstration of the manufacture of gas from peat was given in Montreal recently by J. D. Oligny, the inventor of the process used.

The peat is not used in the raw state, but undergoes a preparation by which the capillary structure of the peat fibres is broken down. This operation forms the

kernel of Mr. Oligny's patented process, and is rendered necessary by the peculiar capillary properties of peat, which make it very difficult to dry and compress the peat so long as the capillarity is unchanged. These tiny capillary tubes persist in absorbing moisture even after an expensive drying process, but after Mr. Oligny's process the moisture is automatically given off and the difficult pressing and drying operations are dispensed with.

The process of the gas-making is very simple, as no dryers or scrubbers are necessary. The model apparatus is shown in the accompanying illustration. The gas is made in a revolving metal retort, the charging door of which is shown at A. The gas emerges through the pipe B, and all the fixed gas passes through the pipes F to the gasometer. The condensed volatile matter returns through the condenser D, as a liquid, containing parafine, tar and alcohol. This is re-

Gas From Peat—the Apparatus.

C is a "collector," down which the tar and acetate of lime flows. These by-products of the operation are mixed with the residue left in the retort and made into small briquettes, which make an excellent fuel. The door A will be made to work on hinges to facilitate charging. The retort is revolved by means of a chain E, engaging a sprocket wheel in the rear of the furnace.

In commercial operation the apparatus will be self-contained, i.e., the gas will be used to heat the retort and as power to drive the revolving mechanism.

In the demonstration 3 pounds of peat made 33 cubic feet of gas in 25 minutes, minute had elapsed after charging. About 23,00 cubic feet of gas is evolved from a ton of prepared peat, at a cost of $4 per ton. The gas, which is non-poisonous, is claimed to give a better light than coal gas in the ratio of 23 to 17, and the making consumes only one-tenth of the time. The Peat Gas & Coke Co., whose headquarters are at Montreal have a franchise to supply the Town of Ville Emard with this peat gas. It is claimed that this gas can economically be used by steel companies and other forging systems, as well as for power purposes, and the cheapness and simplicity of production should appeal to the majority of power users.

EVOLUTION IN THE TINSHOP.

Conditions of a generation ago were vastly different than those which exist in the modern tinshop. Then the making and repairing of household utensils made up the largest share of the work done, where now this work is done more cheaply by the large manufacturers, and chief reliance must be placed upon work in connection with the heating and building trades.

It is true that milk cans, pails, etc., are still made in thousands of tinshops throughout the country, but as a rule this is done to keep the tinner engaged in slack times, the scarcity of tinsmiths making it desirable to keep a good workman when one is secured. A sufficient demand for "home-made" buckets, etc., can be created amongst farmers and dairymen to allow of the disposal of the local product at profitable prices if the proper equipment is installed to aid in their manufacture.

The changed conditions have resulted in making the tinner more of a business man than a mechanic, work at the bench and pattern table giving place to figuring contract jobs, which require closer application and carry greater responsibilities. Instead of a mistake costing a sheet of tin, it may now cost all the margin of profit on a big job. Commenting on the modern tendencies in the sheet metal trade the "Sheet Metal Shop and Pattern Cutter's Magazine," a new monthly recently established in New York, says:

"The conditions in this trade are rapidly changing. The sheet metal worker who attempts to make heater pipe elbows in his own shop is losing money unless he has special equipment for that work. The same is true of much of the cornice work. The diamond bosses can be purchased cheaper from the stampers than, if only a few are wanted, the pattern can be cut. The power squaring shears may seem a luxury to some, but the low cost of an electric motor and the slight expense for current will be quickly offset by the increased rapidity of the work. The bench punch, or, better still, the gang punch, pays for itself in a short time when intelligently used. To achieve success one has to be either a thorough business man, knowing the practical side of the business, or a workman who is intimately acquainted with the details of business and who is able to figure cost."

General Building.

A new palm house and conservatory will be erected in Stanley Park, Vancouver, as an Oppenheimer memorial.

The general contract for the erection of a Roman Catholic presbytery at La Prairie, Que., has been awarded to Francis Dufresne.

The contract for the superstructure for the Canada Life Building at Vancouver, has been awarded to McDonald & Wilson of that city. Estimated cost, $200,000.

The Metropolitan Building Co., Wm. Holden and George J. Bauer, are erecting ten-storey steel-concrete buildings at Vancouver, and George Bower is also erecting an eight-storey building of the same type in that city.

Recent building permits at Ottawa include: Jas. Davidson, apartment house, $6,000; T. J. Somerville, dwelling, $3,000; David Beggs, dwelling, $2,500; S. Miller and D. E. Epstein, addition to shops and dwelling, $5,000.

The following are recent building permits granted at Vancouver: G. H. Cottrell, $9,000; Passage & Tomlin, two houses, $4,000; T. R. Hyndman, $6,000; M. McLean, $6,000; W. W. Stuart, two houses, $6,000: McLean & Matheson, $2,600; W. W. Stuart Limber Co., $5,000; Wm. Simpson, four houses, $6,000; M. Campbell, $3,000.

CLEVELAND'S NEW PLUMBING CODE.

The accompanying chart from "Domestic Engineering," shows in a compact and referable form many of the requirements concerning the instalation of plumbing under the new Cleveland Plumbing Sode. An examination of the chart will show that grouped under the title of "Traps" will be found the subdivisions of plain and resealing traps, and then under these titles are given the requirements of the code as to depth of seal, distance from vent or stack, limit of vertical portion, maximum distance which trap may be allowed from fixture; also information concerning trap cleanouts.

There is also shown under the groupings of "Sizes for Fixtures," various sizes of traps which may be used with the different plumbing fixtures. Conditions under which slip joints and unions are allowed are also shown, together with the restrictions relating to the use of the drum trap. In the tabular portion of the chart will be found the sizes of pipe, and in the next column the areas of circles, and in the following column two-thirds of the areas of these same circles. This saves a great deal of computation by those who have to know these facts.

Under the heading of lead pipe, bends and traps are given the required weight per foot of the different sizes and the maximum sizes allowed, inclusive of bends and traps for branches of wastes and vents. Under the heading wastes and soil stacks, there is given the number of traps of various sizes which count as fixtures, the maximum length allowed in feet to the highest connection for branches and stacks of waste pipe, soil and waste pipe, or soil pipe alone. Under the heading of vent and back vents are given the sizes of vents for the traps of different sizes, the maximum length allowed in branch and main vents and back vents for different sizes, and the maximum number of traps allowed on branch and main vents and back vents. Under the heading of no vent—vertical stack, there is given the maximum number of traps allowed on stack where waste part of the stack is vertical between fixture inlets.

DETAILS OF CLEVELAND PLUMBING CODE.

TRAPS.-

PLAIN
- Minimum depth of seal — 2½ inches
- Maximum distance from vent or stack — 5 feet
- Three feet of this distance may be vertical — 3 feet
- Five foot limit - vertical portion may be — 5 feet
- Ten foot limit - vertical portion may be — 10 feet

RESEALING
- Must be tested and approved.

DISTANCE
- Maximum allowed from fixture — 2½ feet
- developed length from vent or stack to trap seal
- Measured along the centre line of the waste pipe
- Allowed in a water closet, pedestal urinal, or slop hopper from floor to trap seal — 15 inches
- S traps of smaller fixtures — 18 inches
- P traps from wall to trap seal — 9 inches

CLEANOUT
- Screws must be on the inlet side, or in trap seal, or the top of the cleanout may be on a line with top of waste pipe.
- Must be full size of trap up to four inches.
- Must be protected against Twisting at the floor line.

TRAPS.-

SLIP JOINTS - Allowed only on fixture side of trap or in the trap seal.

UNIONS - Must be ground faced and exposed

SIZE FOR FIXTURES
- Water closet, pedestal urinal, Floor drain, — 3 inch
- Slop sink with trap combined, Yard drain — 3 inch
- Shower bath, Slop sink ordinary — 2 inch
- Urinal trough, Laundry tubs 4 to 6 — 2 inch
- Wash basins, and Laundry tubs Group of 2 or 3. — 1½ inch
- Kitchen or Pant. sinks Hotel or Public, — 1½ inch
- Bath tub, Sitz bath, Single wash basin, — 1½ inch
- Sinks, Kitchen & Pantry for dwellings & suites Bar sinks 1½ inch
- Refrigerators, Drinking fountain, fountain Cuspadors ¼ inch
- Safe wastes and drips — 1 inch

DRUM - Must be self cleaning and free from interior partitions and deflectors. The diameter shall not be greater than twice the diameter of the inlet, except that for a bath tub and wash tray a four inch diameter may be used.

SIZE OF PIPE	CIRCLE AREAS. AREAS OF CIRCLES	2/3 TWO THIRDS AREAS OF CIRCLES	LEAD PIPE.- BENDS & TRAPS. WEIGHT PER FOOT Lbs.	MAXIMUM LENGTH ALLOWED INCLUSIVE OF BENDS AND TRAPS FOR BRANCHES OF WASTES AND VENTS.	WASTE AND SOIL STACKS. TRAPS COUNT AS NUMBER OF FIXTURES	MAXIMUM LENGTH ALLOWED IN FEET TO HIGHEST FIXTURE CONNECTION: BRANCH	STACK	WASTE PIPE MAXIMUM NUMBER OF FIXTURES ALLOWED: BRANCH	STACK	SOIL AND WASTE PIPE MAXIMUM NUMBER OF FIXTURES ALLOWED: BRANCH	STACK	SOIL PIPE ALONE MAXIMUM NUMBER OF CLOSETS ALLOWED: BRANCH	STACK	VENT AND BACK VENT. SIZE OF VENT FOR TRAPS	TRAPS COUNT AS NUMBER OF TRAPS	MAXIMUM LENGTH ALLOWED IN FEET. BRANCH	MAIN	MAXIMUM NUMBER OF TRAPS ALLOWED: BRANCH	MAIN	NO VENT - VERTICAL STACK. Maximum number of traps allowed on stack where main part of stack is vertical between fixture inlets. 1¼"	1½"	2"	3"	1¼"	1½"	2"	3"
1"	.7854	.5236	1½		1			1						1½	1															
1¼"	1.2270	.8180	2½	12'	1			1						1½	1															
1½"	1.7671	1.1780	3½	10'	1			3	3					1½	1	10	20	2												
2"	3.1416	2.0944	4	8'	2	20	40	10	20					1½	1	20	40	12	24	2	2	1		2	2	2				
2½"	4.9087	3.2724			3	35	65	16	32					1½	2	35	65	18	36	3	2	2		4	2	2				
3"	7.0686	4.7124	6	5'	4	50	100	30	60					2	3	50	100	33	66	4	3	2		4	4	2				
4"	12.5664	8.3110	8	2½'	5	75	150	72	144	48	96	12	24	2	4	75	150	99	198	7	5	3	2	8	6	4	2			
5"	19.6350	13.0900				100	200	144	288	96	192	24	48	2½	5	100	200	198	396	11	8	5	3	12	8	6	2			
6"	28.2743	18.8496				125	250	252	504	168	336	42	84	3	5	125	250	300	600	16	11	7	3	16	12	8	4			
7"	38.4846	25.6564				150	300			280	560	70	140							21	15	9	4	22	16	10	4			
8"	50.2656	33.5104				175	350			420	840	105	210							28	19	11	5	28	20	12	6			
9"	63.6174	42.4116				200	400			580	1160	145	290							35	25	14	7	36	26	14	8			
10"	78.5400	52.3600				225	450			800	1600	200	400							43	30	17	8	44	30	18	8			
11"	95.0033	63.3352				250	500			1060	2120	265	530							52	35	21	9	52	36	22	10			
12"	113.0980	75.3986	H.J. Lum	Cleveland	Ohio	275	550			1420	2840	355	710							62	43	25	11	62	44	26	12			

New Buildings, Water and Sewerage Systems

Opportunities Offered by Municipalities and Private Enterprise for New Plumbing, Heating, Ventilating or Sanitary Systems—Work Being Undertaken in Every Section of the Dominion.

Municipal Undertakings.

Hamilton's trunk sewer will cost $476,275.

Souris, Man., will instal a sewerage system.

The proposed sewer at Kingston will cost $19,000.

A sand filtration plant has been recommended for Brockville, Ont.

The Winnipeg Board of Control recommends that the contract for supplying water pipe be awarded to the Stanton Iron Works, Montreal, at $18,131.

Regina ratepayers will vote on a by-law authorizing the spending of $10,000 on water works extensions.

The Vancouver Board of Works are considering the construction of many additional sewers.

The following by-laws were carried at Regina, Sask.: waterworks extensions, $10,000; sewerage extensions, $10,000.

Tenders are being called by Calgary, Alta., until April 22, for the construction of sewers, water mains, etc.

Tenders have been called for the supply of 137,000 pounds of lead pipe for the Winnipeg waterworks department.

Toronto's Board of Control are asking for tenders for the supply of 1,500 feet of piping for the waterworks intake extension.

Regina's city engineer has recommended the spending of $273,300 on a trunk sewer and $87,331 for the construction of disposal works.

The estimates made by the London Water Commissioners include: Service extension, $6,000; main extension, $10,000; meters and hydrants, $7,500.

Staffordville, Alta., residents want a waterworks system and have asked Lethbridge to make some extensions so that the systems could be united.

The Ontario Railway Board has given Toronto permission to issue $45,000 debentures to cover the cost of laying trunk sewers in the east end annex.

Prescott, Ont., will shortly invite tenders for the extension of their sewerage system, including one septic tank. A by-law to raise $22,000 for this purpose has been carried.

The Toronto Board of Control awarded the contract for one 42-inch hydraulically operated stop valve for the main pumping station to Canadian Fairbanks Co., Toronto, at $1,180.

City Engineer Ker, Ottawa, submitted plans for the west end drainage system with a septic tank in Mechanicsville. The plans will now be forwarded to the provincial board of health for approval.

The St. Thomas power committee awarded the contract for general supplies to Ingram & Davey at $1,561.44, and The Gartshore Foundry Co., Hamilton, will furnish 30,000 tons of cast iron pipe at $34 per ton.

The Canada Foundry Co. was this week awarded the contract for special castings to be supplied Toronto's City Engineer's Department at $598. The Drummond-McCaul Co. got the contract for a ten-inch water meter at $785.

Public Buildings.

Markdale, Ont., will erect a new school house.

A $12,000 school house will be erected at Elbow, Sask.

A new Anglican church will be erected at Merritt, B.C.

The new Orpheum theatre at Winnipeg will cost $150,000.

A new isolation hospital will be erected at Vancouver, B.C..

A new school house is being erected at Westboro, Ont., to cost $15,000.

A new municipal building will be erected at Sudbury to cost $25,000.

Presbyterians of Wrightville, Que., will erect a Protestant school at that place.

The Fort Rouge Methodist congregation, Winnipeg, will erect a new edifice to cost $45,000.

J. H. Tremblay & Co. were awarded the contract for the Lord Roberts' school at Winnipeg.

The High Park Methodist Church, Toronto, will build a Sunday school building to cost $20,000.

The contract for the new school house at Prince Rupert, B.C., has been awarded to A. J. Prudholme.

The congregation of the First Baptist Church, Vancouver, B.C., will erect a new edifice to cost $100,000.

The Young Methodist Church congregation will erect a new edifice at Winnipeg to cost $72,000.

The Salvation Army have completed plans for a new barracks in East London, to cost $4,000.

An eight-roomed school and a four-roomed school will be erected at Flesherton, Ont.

St. Dunstan's congregation, Fredericton, will erect a large building this summer for school and other purposes.

The congregation of St. Andrew's Presbyterian church at Moose Jaw, Sask., will erect a new edifice.

Regina ratepayers carried the by-law authorizing the erection of a new market building to cost $16,000.

Tenders will be received by Geo. Fisher, South Middleton, Ont., until April 20, for the re-construction of the schoolhouse there.

The by-law to borrow $20,000 to be used in the construction of a new school in the Galician settlement near Portage la Prairie, Man., has been carried.

Regina ratepayers will vote on by-laws to spend $25,000 on new exhibition buildings, and $16,000 on a new market house.

The contract for the building of the new St. Jean Baptiste School, at Hull, has been awarded to Louis Lemieux at $5,400.

The contract for the building of the new Roman Catholic church at Annapolis Royal, N.S., has been secured by Mr. Allen, of Middleton.

The Guelph Board of Education will install a new heating system in St. George's school, and a new ventilating system in the Central school.

Additions and alterations to Brantford schools to cost $30,000 will be made, the by-law authorizing same having carried last week.

Dr. Sharpe has submitted plans for the various hospital buildings at Winnipeg, Man. The by-law to raise $600,000 for hospital will be submitted to the ratepayers shortly.

Tenders addressed to E. M. Elliott, County Clerk, will be received until April 8 for the installation of a steam heating system in the Court House at Peterborough.

Alderman Humber, of Victoria, has succeeded in having his resolution that a by-law be submitted to raise $15,000 for the construction of three public conveniences adopted.

All the plumbing and sanitary arrangements in the old portion of St. Patrick's Orphanage, Ottawa, will be remodeled. This will probably cost between $3,000 and $4,000.

Tenders addressed to the chairman of the Board of Control, Toronto, will be received until April 5, for the complete supply and installation of a low pressure steam heating system in St. Lawrence Hall.

The London city council will submit to the Middlesex county council a proposition for a new civic building to replace the present city hall and existing court house and jail.

Winnipeg proposes to spend on the extension of General hospital, $300,000; auxiliary hospital to General, $100,000; isolation hospital, $100,000; tubercular hospital, $75,000; and morgue, $25,000.

General Buildings.

Calgary Odd Fellows will erect a $100,000 temple.

Clement Bros. are erecting a business block at Brandon, Man.

Willis & Co., Montreal, will erect a new building at that place.

H. A. Sinnot, Calgary, will build a large business block at Lethbridge.

F. Lashbrook has taken out a permit for a dwelling at London to cost $5,000.

A $7,000 hotel will be erected at Forget, Sask.

Douglas & Co. will erect a warehouse at Winnipeg.

The Grey Nuns will erect a new building at Regina, Sask.

J. Vaio will build a business block at Victoria to cost $10,000.

The Y. M. C. A. will erect a new building at Lethbridge.

D. B. Niblock will build a $5,000 dwelling at Calgary.

The Tourist Hotel Co. will erect a new building at Kenora, Ont.

The Oblate Fathers will build a printing office at Winnipeg.

John Young, Waterford, will erect six new houses in Welland.

An apartment block will be erected at Winnipeg to cost $350,000.

W. Holden is erecting a $250,000 building at Vancouver, B.C.

Finch & Finch will erect a three-storey block at Victoria, B.C.

Mr. Moriarty, of Spokane, will build a business block at Calgary.

J. E. Annable will erect a new business block at Nelson, B. C.

The Presbyterians purpose building a new manse at Rothsay, Ont.

J. B. Shaw will erect an apartment house at Regina to cost $25,000.

The C. Stephens Co. will erect a large building at Collingwood, Ont..

The Westholme Lumber Co. will erect a hotel at Prince Rupert, B.C.

The Union Bank will erect a $150,000 office building at Toronto.

The Canada Veiling Co. are erecting a $76,000 building at Toronto.

P. W. Scott is building two stores and a residence at Prince Rupert, B.C.

A. B. Kent will erect an apartment house at Winnipeg to cost $50,000.

S. Hinaccal will erect a cold storage plant at Winnipeg, to cost $80,000.

Plans are being prepared for a new C.P.R. hotel at Fort William, Ont.

M. Le Page will erect an apartment house at Winnipeg to cost $18,000.

Mrs. P. J. Rochon will erect a store and office building at Fort William.

Sweeney & McConnell will erect a building at Victoria to cost $15,000.

An armory will be built next year at Prince Albert, Sask., to cost $10,000.

The G. T. P. will erect a 10,000,000 bushel elevator at Porth Arthur, Ont.

W. H. Westman, Chatham, Ont., will build a three-story business block.

Stanfields, Ltd., will erect a large building at Truro, N.S., to cost $50,000.

The Kilgour-Reiner Co. will erect a warehouse at Winnipeg to cost $21,000.

The Bank of Montreal will erect a building at Winnipeg to cost $950,000.

Judge Galliher, Victoria, will erect a residence at that place, to cost $12,000.

A summer hotel will be erected on Campbell's Hill near Talamagouche, N.S.

A four-storey apartment house will be erected at London, by M. F. Martin.

Plans for the erection of a new registry office for London will soon be under way.

C. F. Madden will erect a $35,000 apartment house on St. Albans St., Toronto.

Senator Lougheed will erect a skyscraper, at Calgary, at a cost of $300,000.

An English syndicate will build a warehouse at Winnipeg to cost $100,000.

The Yorkton Forwarding and Storage Co. will build a warehouse at Yorkton, Sask.

Hang Bros. and Neilermoe Co., Winnipeg, will erect an $8,000 warehouse at Regina.

C. J. Church, Vancouver, will erect an apartment house at that place to cost $18,000.

A. Rosenthal & Sons will erect a large office building at Ottawa, to cost $125,000.

D. L. Campbell will erect two dwellings and an apartment at Ottawa to cost $14,300.

The Bell Telephone Co. will erect a new office building at Stratford to cost $50,000.

F. Lindsay will erect a store and apartment block at Winnipeg to cost $90,000.

The Alexandra Club, Victoria, will erect a club house at that place to cost $15,000.

T. Eaton Co. will erect an addition to their store at Toronto to cost $57,000.

The T. Eaton Co. will add an additional storey to their department store at Winnipeg.

An office building will be erected on the Baner block, Vancouver, to cost $225,000.

The Urban Mutual Insurance Co. will erect an office building at Portage la Prairie.

A rink of steel structure will be erected at Carleton Place, Ont., to cost about $15,000.

The new Y.M.C.A. building to be erected this year at Halifax, will cost $150,000.

F. Nicholis, Toronto, will erect a six-storey office building on King street, that city.

Joseph Perrault has completed plans for St. George's Apartments to be erected at Montreal.

C. H. Stephenson, Saskatoon, will erect a business block at that place to cost $20,000.

Hon. William Templeman will erect a large office building at Victoria, B.C., to cost $72,000.

A three storey block, is to be erected at Victoria by a Chinese firm. The cost will be $30,000.

H. G. Elliot, of Vancouver, will build an apartment house at that place, to cost $16,000.

The C.P.R. will double the size of their station at Lethbridge, Alta., at a cost of $35,000.

The Canada Life Assurance Co. will erect a large eight-storey office building at Vancouver.

The Port Arthur Independent Order of Foresters are planning to erect a business block at that place.

W. D. Giffin, has been awarded the contract for the new clubhouse for the Sarnia Golf Club.

A mammoth department store is to be erected by the Marshall Field Co., of Chicago, at Winnipeg.

The Bank of Montreal will erect a building at Moose Jaw and also one at Medicine Hat.

The Bank of Commerce will tear down their present building at Winnipeg and double its size.

H. A. Hart has been granted a permit to build an apartment house at Toronto, to cost $25,000.

Worswick Bros., contractors and builders, of Elmwood, will build several fine residences at Winnipeg.

Carson, Falkner & Ladell will erect a block of stores and apartments at Winnepeg to cost $25,000.

D. R. Smith, of Boston, is considering the erection of a hotel at Kingston, to cost not less than $250,000.

W. B. McKay & Co., Sussex, N.B., are planning the erection of a big new business block there in the spring.

Burns & Walken, have purchased property at North Vancouver, B.C., on which a tourist hotel will be erected.

H. B. Rugh, architect, is preparing plans for the Winnipeg Land and Mortgage Company's building at Winnipeg.

The Dominion Stock & Bond Corporation of Vancouver, will erect a 12-storey building at that place to cost $600,000.

W. Bruce, Winnipeg, is preparing plans for an apartment house to be erected by the Minnewaska Syndicate at Winnipeg.

A chain of Carlton-Ritz hotels will be erected in Canada. The first will be built at Montreal to cost about $3,000,000.

The contract for the new Molsons Bank building to be erected at Edmonton, has been awarded to J. Dunlop of that city.

A. C. Hope has prepared plans for R. M. Edgar for a new six-storey apartment house at Vancouver. Estimated cost $175,000.

Recent building permits at Victoria include: H. W. Davies, apartment block, $8,000; John Valo, combined store and dwelling, $4,000.

H. S. Griffiths is preparing plans for an eight-storey block to cost over $100,000 to be erected at Victoria by The Dominion Trust Co.

Carter, Halls & Adinger have been awarded the contract for the six-storey office building to be erected in Calgary for Leeson & Linehan.

The contract has been let to Phillip Burns by the Paulin-Chambers Co. for their building at Winnipeg. Work will start at once. Cost, $31,000.

Mason & McLeod will erect an apartment house at Vancouver to cost $80,000. Another apartment house will be erected by G. King at that place to cost $25,000.

Work has commenced on what will be the largest building in Victoria. This is the eight-storey block to be erected by J. A. Sayward, on Douglas Street. The building, will cost $200,000.

The following building permits have been issued at Winnipeg, J. C. Chapman, three houses, $11,400; T. H. Tremblay, dwelling, $6,000; J. C. Hicks, nine dwellings, $18,000.

The W. I. Fenton Land Co., St. John, N.B., is asking the city to take over a street near Douglas Ave., put in water and sewerage, so that the company can erect eleven houses, costing $2,500 each.

The following building permits have been issued by the Toronto City Architect: Dr. J. F. Gallanough, seven dwellings, $24,000; Jess Applegath, dwelling, $20,000; James Gibson, three dwellings, $18,000.

PLUMBING AND HEATING MARKETS

MONTREAL.

April 14. The extremely mild weather having stimulated business, the rush has started much earlier than is usually the case. The ground being unfrozen, new buildings are well ahead of time. All this is helpful to trade generally. Soil pipe has been selling well, while radiators and boilers are in good demand even for immediate delivery, showing how building has been carried on through the winter.

Manufacturers report supplies in good shape, despite the demand that has been in evidence since the turn of the year, and the rush of the season will be met fairly well. Soil pipe may be short for fall delivery. Lead and iron pipe are going out well, and users are apparently getting ready a little surplus stock with which to meet the rush. The opening of navigation will see the shipping of some heavy consignments to some of the lower ports. Three Rivers is taking a great quantity of material.

No change is reported in the markets, and the tone is firm. Plumbers are very optimistic and plenty of work is ahead of them. Building reports are very favorable for the fall, and a heavy season right through to the winter is in prospect.

Soil Pipe—The mild weather has stimulated the sale of soil pipe, the ground early being in fit shape for starting building. The lower ports are taking good consignments by the boats. Supplies are in fair shape, but if the demand proves heavy, as it is expected to do, the probability of a shortage in the fall is not unlikely. The market is firm, and we quote light 60 off, and heavy 70.

Lead Pipe—Trade is very good, and is showing rush proportions. Good orders have come in from outside points. The market is firm, and we quote pipe and waste at 25 off; traps and bends, 50; calking lead, 5c per lb.

Solder—Heavier buying is noticed in anticipation of a rush when building is well under way. Roofing work is active. Jobbing work is also good. No change is reported, and we quote half-and-half [illegible].

Iron Pipe—No change is reported in quotations. The demand has become very active, and some heavy lots are waiting open water freightage. We quote: ¼-in., black, 63; galvanized, 48; ⅜-in. black, 59; galvanized, 44; ½-in. black, 69; galvanized, 59; ⅜ to 4-in. black, [illegible].

Radiators and Boilers—There is a good demand for immediate delivery in radiators and boilers, houses erected during the latter port of the winter being now ready. Manufacturers are preparing for a good rush, and it is expected that there will be no difficulty in meeting the demand. Cutting is reported in some quarters, although there seems any amount of trade offering. We quote, however, steam boilers, 60 and 5; hot water boilers, 50 and 10; wall and hot water radiators, 50 and 7½; steam radiators, 50 and 7½ per cent.

Enamelware—A very good tone is reported in the enamelware market. Manufacturers are working at full pressure to meet the demands. Jobbers are shipping out good lots daily, and the feeling, generally, is one of satisfaction. No price changes are reported.

Scrap Market—A little better business is offering, with prices unchanged. We quote: Heavy copper wire, 11½;c light copper bottoms, 10c; heavy red brass, 10c; heavy yellow brass, 8c; light brass, 6¼c; tea lead, 2½c; heavy lead, 2¾c; scrap zinc, 3c; cast iron, $16.

Metals—The markets are unchanged. Good business is reported, and we quote: Tin, 35c; copper, 14½c; imported lead, $3.75; domestic lead, $3.60.

TORONTO.

April 14.—While there is no particularly outstanding feature in the plumbing situation at present, the volume of goods going out in shipments is steadily increasing. March and up to the present in April there has been splendid trading. Roughing-in materials—lead and iron pipe, solder, soil pipe, etc.—have been increasingly active as the season advanced, and quite a lot of enamelware is going to outside points on specifications for work already contracted for.

Prices are unchanged. The market is showing a tendency to firmness, but no actual changes are anticipated.

Soil Pipe.—This is one of the most prominent lines just now and shipments are depleting the stocks. A big demand was anticipated and manufacturers prepared themselves for it by piling up pipe, The market shows firmness, with prices at last issue's figures. Light pipe is 60 and 10, with fittings 70 and 10; medium and heavy pipe are 70 and 10; and 7 and 8-inch pipe 50 p.c.

Enamelware—Increased deliveries are noted over those in March. Buying this year has begun earlier than during the past several years. Much of the goods already sent out was for stocking-up purposes, as many out-of-town master plumbers found difficulty late in the season last year in getting their orders promptly. A great number of the baths, sinks, laundry tubs and closet combinations at present going forward are to fill actual requirements on specified jobs. Prices are unchanged.

Lead Pipe—There is a very good movement to all lead lines, and pipe is heavy in most of the orders received. Quotations are stationary. Pipe and waste are 25 off; calking lead is 4¾c a pound; and traps and bends are 50 p.c. discount.

Solder—Great quantities of solder are now going out, all supply houses reporting good sales. The various grades of half-and-half bars range from 18½c to 20c a pound, while wiping solder runs from 17c to 18½c a pound.

Iron Pipe and Fittings—These goods are better sellers just now for plumbing work than at any time since the commencement of the year. Price quotations are the same as at last issue's figures, though some of the prices are unsteady. Malleable fittings run from 37½ to 40 per cent.; and cast iron from 60 to 65; standard bushings are 70 and malleable bushings, 65. Nipples are 75 and 10; headers, 60; flanged and malleable-lipped unions, 65. Galvanized pipe (1-inch) is 6.35 per hundred feet, and black pipe, same size, is $4.70.

Boilers and Radiators—Still increasing business is noted among the heating goods, and ere the middle of summer is reached there will be a veritable boom on. Present trading is satisfactory. Prices are unchanged from the quotations ruling of late. Hot water boilers and radiators are 50 and 10, and steam radiators are 50, 10 and 2½ p.c. off.

Brass Goods—Steadily active business progresses. All kinds of brass work are showing strength, and a number of orders are held up to await a chance for filling. Quotations remain at old prices. Fuller work is 70 p.c. High-grade compression is 60; medium, 65; and standard, 70. Gas brackets, chandeliers and electroliers are beginning to show activity.

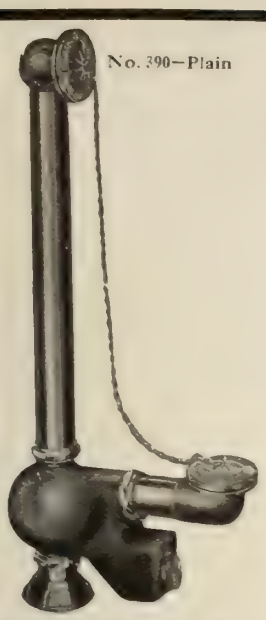
Metals—Copper is slightly lower, and all the other metals show an easier price tendency. Tin is 35c; copper, 14c; lead, $3.85 (imported) and $3.75 (domestic). Old metals are unchanged. Iron is 8c; lead, 3c; zinc, 4c; copper, 9c.

BUILDING NOTES.

Work will commence at once on a five-story building to be erected on the Bowker property, Fort Street, Victoria.

Work will start almost immediately at Victoria on the Finch & Finch $15,000 building; J. Vair's $10,000 structure, and a $15,000 building for Sweeney & McConnell.

The Y.M.C.A. are calling for tenders for the plumbing and heating work to be done in their new building at Victoria. The general contract has been awarded to J. L. Skene.



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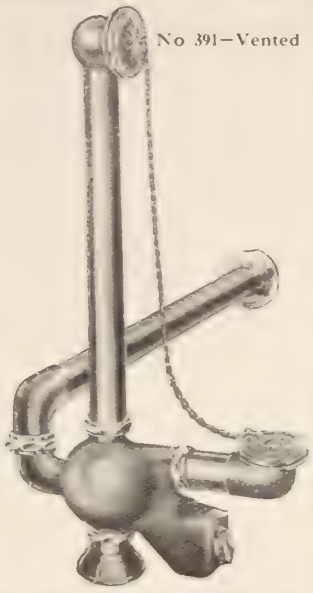

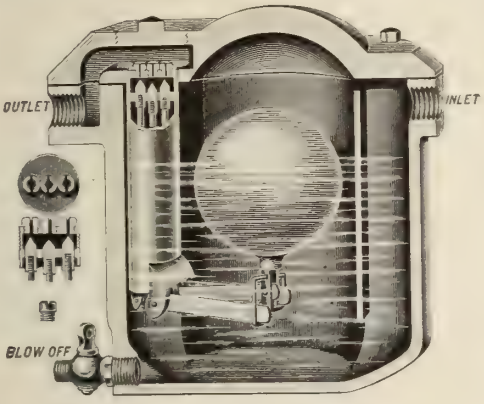

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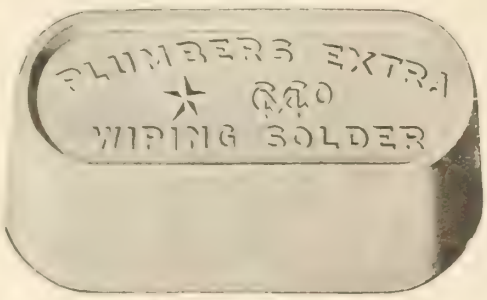

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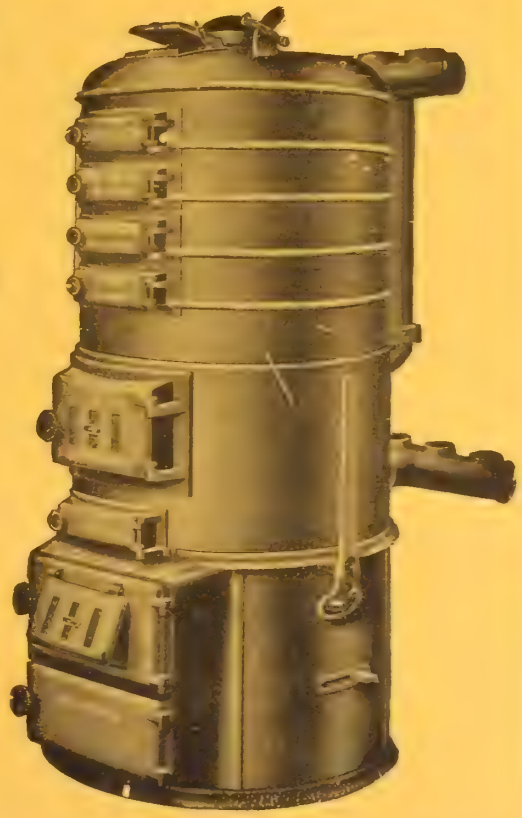

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Plate F
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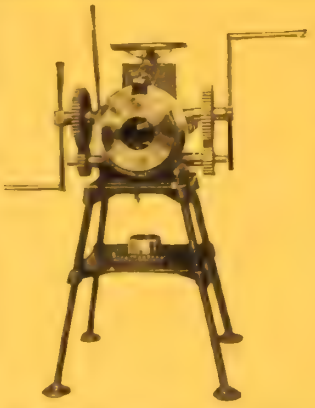

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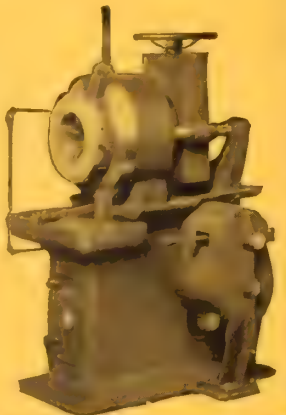

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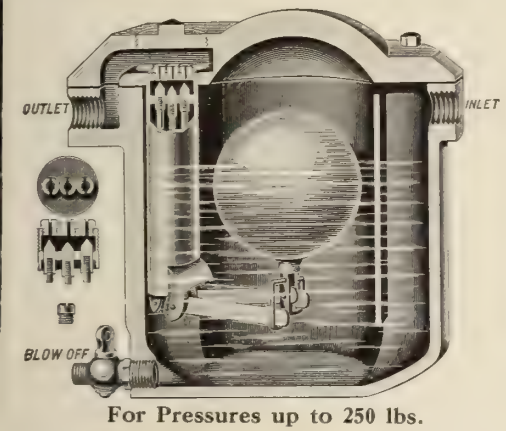

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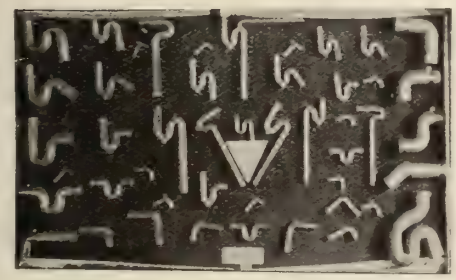
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TORONTO MAY 2, 1910

SECRET COMMISSIONS DECLARED ILLEGAL.

His Lordship, Justice Magee, says it is illegal for a purchaser to accept a secret rebate. The Secret Commissions Act makes no distinction between receiving and giving a secret commission.

Justice Magee says: "If you sent your servant to market to buy a horse and there he meets with a man who offers him a horse at $150 and says, 'If you will buy this horse at $150 I will give you $10 of it to yourself; and you need not have any compunction about it, because I would not let your master have it for less than $150.' And your servant gets it for $150 and puts the $10 in his pocket, you can recover that $10 from your servant. It is your money, not his, because it was made out of the transaction which he was carrying on with some person else for you; now, that is clear law. So, a commercial traveler sent out by a house here in Canada to buy goods for that house in the States, and he may be offered a commission by a person in respect to the goods he buys. When he comes back to Canada, if the transaction ever becomes known, he is liable to pay over that money to his employers. He has no right to be paid at both ends, unless it is known. This question of double commissions has for a long time past been quite too common, and has been permeating to a large extent the commercial life of the country. So much is that the case that last year the Dominion Government passed an act making it a criminal offence to take a double commission."

Let us see whether the other half of the act is not just as binding on the giver of the secret rebate as it is on the receiver. Clause (b) reads as follows: "Being an agent, corruptly gives or agrees to give or offers any gift or consideration to any agent as an inducement of reward or consideration to such agent for doing or for-bearing to do, or for having after the passing of this Act done or forborne to do, any act relating to his principal's affairs or business, or for showing or forbearing to show favor or disfavor to any person with relation to his principal's affairs or business."

It must be evident from the above that the object of the law is to prevent the seller from giving a secret commission. So that the traveler who gives a secret rebate or other consideration is clearly violating the act.

So far as the liability of the person who accepts the secret rebate is concerned, clause (d) covers that. It reads: "Every person who is a party or knowingly privy to any offence under this act shall be guilty of such offence and shall be liable upon conviction to punishment hereinbefore provided for by this section."

So that a plumber or fitter who accepts a secret commission or consideration is guilty under the provisions of the act and liable to the penalties in imposes.

The Plumber and Steamfitter is pleased to know that the position taken in these columns has been so fully endorsed by such an eminent authority as Justice Magee. We are especially pleased because it tends toward honesty in business and it should, therefore, be hailed with pleasure by every honest person in Canada.

TRAVELERS FIGURING JOBS FOR PLUMBERS.

A subject which has been discussed at several meetings of master plumbers in Toronto during the past month has been that of supply houses encouraging incompetent men to enter the plumbing business. Men who are unable to figure jobs themselves have this done for them by salesmen. Some supply houses, of course, do not encourage their travelers to do this, while other houses seem to look for business by these tactics. The matter has gone so far, in some cases, that certain plumbing firms have cut out buying from offending jobbers.

The same question has been agitating the heating supply men to some extent, and it is understood that steps are being taken to have their salesmen discontinue the practice of figuring jobs for heating contractors. In the United States heating salesmen do not figure jobs, confining their assistance to advice on matters of instalation referred to them.

Unless a master plumber or fitter is competent to figure the jobs he undertakes, or he employs competent men on his staff, his place is amongst the ranks of the journeymen or in some other business, and it is poor policy for supply men to cut up the trade by keeping a large staff of travelers to figure work for customers. When this is done the plumbing firm loses its individuality and really becomes a branch of the supply house which figures its work.

THE SATISFACTION OF GOOD WORK.

A plumber of very high standing was heard to remark the other day, "Well, I have not made much money during my long career as a plumber, but I can safely say no piece of shoddy work ever went out of my shop. I want no better epitaph than: 'He did his work well.'" The manner in which these remarks were uttered showed the pride which the plumber took in his record.

We are pleased to think that there are many plumbers who can point to an equally good record, but we would have the number larger. Just think what it would mean to the plumbing industry as a whole if every plumber, old hand and young hand, were to set up the banner: "I will stand or fall by quality; I will do the best I can for those who have entrusted their health to me."

No other industry suffers from such sneers as that of plumbing. No reputable class of men are made greater butts for jokes reflecting on their honesty of purpose and their skill. Why so many worthy and able men have to suffer for the malpractices of a small minority passes comprehension. But it is so, and the only thing to do is to combat this with might and main.

It is being steadily done. The marvellous development in sanitary science and plumbing equipment, the beautiful pieces of plumbing work that can be seen, and the growing intelligence of the public as to the importance of the plumber, are all helping to kill the odium that has fastened itself upon the poor plumber.

But more has to be done. Every now and then some exposure of shoddy plumbing work throws back the efforts of those who are lifting the plumbing industry to its proper level. The public cannot, or will not, discriminate. They will not recognize that there must be good and bad in all trades. The reputable plumber is condemned through the unscrupulous one. The public, too, are blind to the fact that every time they set out to beat down a plumber's estimate, every time they support a price-cutter by giving him a job, they are encouraging the very work they condemn.

It is impossible to get, at present, adequate support from the public. The plumber must fight this thing out for himself. He can only do it by following out the code of conduct of the plumber we have instanced. At the end he may not have a mighty wad, but he has the satisfaction of knowing that no man can point the finger of scorn at him, and that he has done his best to elevate the status of the plumbing industry, and made things better for those who follow him.

The man who gets his trade by cutting prices must be left alone. There is nothing to be gained by competing with him. He may fill his shop with work, but it is not profitable, and gradually, as his shoddy work gets discovered, as it must in time, so his reputation falls in the minds of all who recognize the absolute necessity of good work, and he goes under. And, do not forget it, the public are becoming educated to the value of getting the best work, and the man who does not give it to them will be passed by. This is becoming more evident as time goes on.

Let the cut-price man alone. Better do half the work at a fair price, than keep on a full shop at no profit. Set up a standard of quality, and abide by it. A noted writer once said that "if a man write a better book, preach a getter sermon, or make a better mouse trap than his neighbor, the world will make a beaten path to his door." Divested of some extravagance, these words are true. Certainly it is becoming more so in plumbing.

OFFICIAL NEWS
N. A. M. P. & S. F. of CANADA

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Chairmen of Committees,—Legislation, H. A. Knox, Ottawa; Sanitary, P. C. Ogilvie, Montreal; Apprenticeship, J. Griffin, Montreal; Essay, E. Russell, London.

Next Convention will be held at Toronto the last week in August, 1910.

THE COMING NATIONAL CONVENTION.

It's up to the national executive committee of the Canadian Master Plumbers' Association to get down to work on the arrangements for the convention to be held in Toronto next August. Three months' active campaign before the convention will mean its unqualified success. To get busy a month before the event will mean almost certain failure—and a continuation of the present unsatisfactory conditions.

Frank Powers, Lunenburg, Nova Scotia, and J. E. Farrell, North Bay, attended the convention in Montreal last September, and put some new life into the organization, their suggestion that the name of the association be changed at the 1910 convention to the Canadian Society of Sanitary and Heating Engineers, meeting with general approval. With this suggestion as a keynote, the coming convention can be made a big success if it is worked up properly. Another most important matter which should receive attention is the necessity for a uniform plumbing by-law in each province in Canada. Nova Scotia and Alberta have set the pace in this direction. With a provincial by-law, such behind-the-times cities as Hamilton and London would have a standard for plumbing work done in these cities.

The coming convention in Toronto will have the hearty cooperation of live local associations in Port Arthur, Fort William, Berlin and other places, as well as Toronto's new association of sixty-odd members. Being held during the first week of Toronto Exhibition, low railway rates will be available, and there should be a good attendance from all parts of the Dominion. Winnipeg, Calgary, Vancouver and other western cities ought to be represented, as well as Montreal, Moncton, St. John and Halifax in the east.

W. B. Geary, a Belleville plumber, wrote The Plumber and Steamfitter this week, saying he wished to attend the convention, and asked what the fees are and how he can become a member. That's the way to talk.

The inquiry has been passed on to R. J. Shannon, 1233 Queen Street West, Toronto, vice-president for Ontario, who has taken the initiative in making arrangements for the convention. Mr. Shannon has written National Secretary Munday, Montreal, suggesting Wednesday, August 31, and Thursday, September 1, as the days for the convention. His idea is to secure a large hall and have an exhibition of plumbing and heating supplies in the body of the hall, with meetings in the same building. If this idea is approved of the exhibition will prove a big drawing card, and an attendance of 200 or more could be reasonably expected.

This seems to be the psychological moment to make a real effort to reorganize the trade throughout Canada. But it's up to the officers of the association and the trade in general.

Manufacture of Sanitary Ware in America

The Development of the Processes of Making Closets and Solid Porcelain Ware Outlined in An Address by Edward C. Stover before the Recent Convention of Plumbing Inspectors at Trenton, N. J.

The development of the sanitary-ware business in America has not only been more rapid than in foreign countries, but the development of bodies from which these pieces are made has also undergone a constant evolution.

The first made in this country in 1871 was of a coarse nature, an absorbent body, probably in grade about as near as what is now known as "CC" in the table line, as any other comparison that could be made. The principal constituents of this body were clay, flint and feldspar, fired in the biscuit state, then dipped in a glaze and fired a second time in the glost kiln. Both the biscuit and glost kilns are round kilns, open fire, and the pieces protected by clay boxes, known as saggers.

The body was improved slightly, both in texture and in color from year to year,

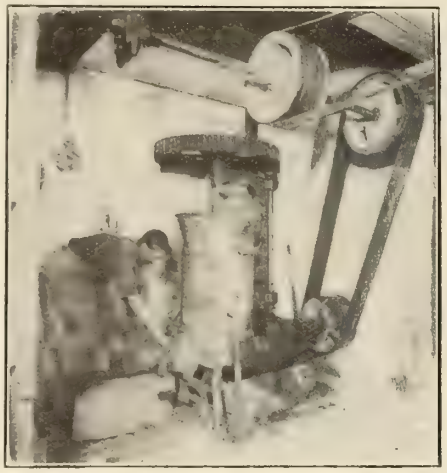
Plunger and Clay Press.

as the improvements in the shape and utility of sanitary pieces were demanded.

The vitreous-ware body that is now very largely in use in the construction of many of the sanitary pieces, particularly closets, tanks and small lavatories, was first adopted in 1891 in the manufacture of a 14-in. plain round wash-basin, and the quality of this vitreous-ware has steadily advanced both in vitrification and fineness of color, until the present high standard has been reached, and even yet most of the sanitary foreign potters decline absolutely to make this class of ware, owing to the extreme difficulty both in manufacture and firing it.

It being thought impossible to make as large a piece as a closet of such tight body, this line of ware was not generally adopted even in America, for such pieces as water-closets, etc., until about 1895.

Anyone connected with any branch of sanitary trade knows the very rapid improvements and developments in this



Clay Ageing Cellar, Pug Mill.

line of ware, which has been made in the last few years, particularly as to size and shape of the various pieces to comply with the sanitary laws that have been recently adopted.

The construction of this ware, of course, is largely of clay, flint and feldspar, but numerous fluxing materials are added to produce the proper degree of

Modelling Room.

vitrification suitable to the various firing temperatures.

There is another class of sanitary ware that has been successfully and constantly in use for a great many years, it having been made in England a long while before it was adopted in the United States. This line of sanitary goods is known as the solid porcelain, which is not, technically speaking, a correct name, as the principal body of ware is made of a fire-clay mixture, this containing some of the very best qualities of fire clay that can be obtained. The pieces made of some of the clays are previously fired and ground at the right degree of firmness, termed grog, and mixed with the other clays that constitute the main portions of the body.

Upon this fire-clay body, while yet in the green state, are placed numerous coats of vitreous-ware coating of lining, which is very similar in its composition to the vitreous-ware body above described, and after a proper number of vitre-

Making Bath Tubs.

ous coats have been placed on the ware, it is then given several coats of a very hard vitreous glaze and fired in a large muffle kiln and completed in one fire.

This ware was first made in the United States in 1893 into bath-tubs, and is now very largely used in making solid porcelain laundry tubs, kitchen sinks, lavatories, slop sinks and special hospital fixtures of various kinds. Many of the very large pieces in the present state of development in the sanitary line are made exclusively of this class of ware, as it has not yet been found practical to make most of these very large pieces vitreous all the way through. As regards their appearance, durability and general sanitary qualities, its worth has long since been proved, as many pieces

that were made 25 to 50 years ago abroad are yet in use in this country, and show up in a good condition. Most of the first product and what has been made since in this line in this country, still remains in daily use.

The most recent development in the sanitary-ware body line is what has been designated as extra heavy vitreous-wares, which have been under the state of development for the last two years, 1908-1909, considerable of it having been put on the market during the year 1909.

This body is very hard and vitreous all the way through, and made in one fire like the solid porcelain body. The difference between it and the solid porcelain being chiefly that all white materials are used in its construction instead of the fire-clay, used in the main body of the solid porcelain, which is slightly buff color.

On a fracture, the extra heavy vitreous-ware looks a little coarser than the regular vitreous body, and is made somewhat thicker, and the pieces are therefore, heavier than either the regular vitreous or the solid porcelain, it being very hard under fracture and hard to shape or grind.

If any holes for fixtures or other depressions are required in the extra heavy vitreous body, as in the regular vitreous, they must be cut through in

Drawing the Kiln.

the green state as even the hardest point steel drills are turned on trying to cut either form of the vitreous ware.

On the whole, I think it is perfectly safe to say that the American products have not only advanced more rapidly in general style and shape of sanitary fixtures, but also in the quality and durability of the bodies used. A very strong proof of this point is in the fact that some of the very finest hotels and large buildings which are being erected in the various countries on the continent in Europe are preferring the American product both as to the shapes and quality.

CHARTERED UNDER NEW NAME.

A Dominion charter has been granted to the Canadian Sanitary Mfg. Co., Ltd., with a capital of $1,000,000, and head office at Montreal, the purposes of the new concern being set forth in part as follows :

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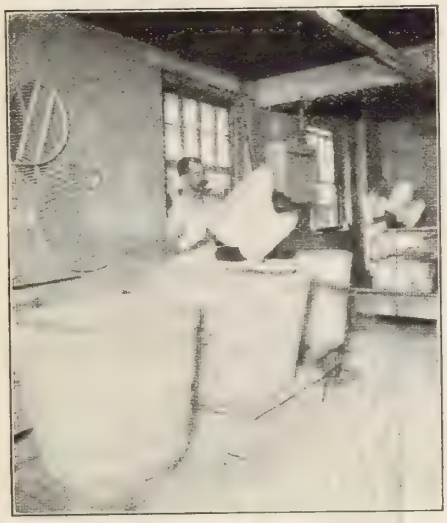
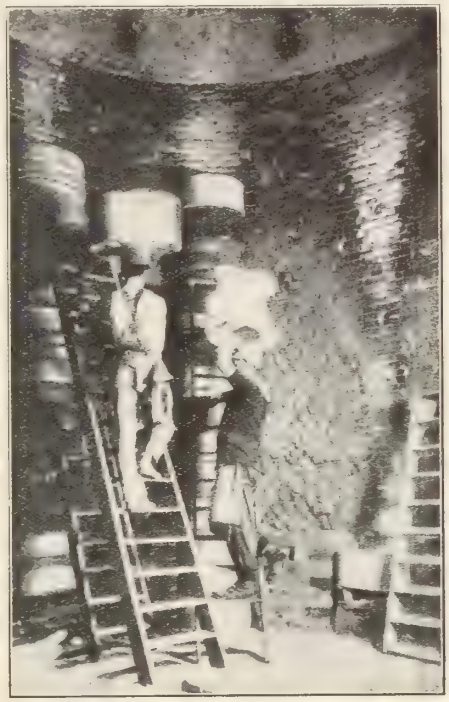


Dipping Ware in Glaze.

ital stock of The Standard Ideal Company, Limited, a body corporate, incorporated under the laws of the Province of Ontario, having its head office at Port Hope, and to pay therefor, wholly or partly in cash, or wholly or partly in paid-up shares, bonds, debentures or other securities of the company ; (b) To carry on the businesses of manufacturers and dealers in furnaces, stoves, ranges, boilers, lavatories, baths, basins, sinks, laundry and toilet wares, cisterns, tubes, pipes for water, gas, sanitation and drainage, sanitary apparatus and appliances, plumbers' supplies, household implements and utensils, and all wares of iron, brass, tin, lead, zinc, or other metal, bronzed, electroplated, galvanized, enamelled, annealed, japanned or otherwise prepared and finished ; and also the business of machinists, water, gas and sanitary plumbers, galvanizers, enamellers, annealers, electro-platers and japanners, tile and terra cotta makers, in all their or any of their branches ; and to buy, sell or deal in all such articles and goods (or such other articles and goods) as the company may consider capable of being conveniently dealt in, in relation to its businesses.



Placing Ware in Kiln.

Interviewed by The Plumber and Steamfitter A. D. MacArthur, Toronto, manager and a director of the Standard Ideal Co., stated that there would be no immediate change in the name of the Standard Ideal Co., the new charter being secured for the purpose of furthering the plans the company has for enlarging the business, announcement regarding which will be made shortly.

The Standard Ideal Co., it will be remembered, announced a probable change in name when Canadian interests purchased the stock held in the company by Cleveland investors. The appeal against the injunction decision recently made against the company in the Quebec courts will, however, delay the change in name, while it is possible the company may continue indefinetly under its present title. The new name is available for use, however, if desired.

Announcement is also made that the proposed merger of the Standard Ideal and the Amherst Foundry companies will not take place, the shareholders of the latter company having declined to dispose of their interests at the terms offered. This means that there will be three large enamelware plants in Canada competing for trade throughout the Dominion after this season.

Master Plumbers' Opportunities for Trade

A Contributor in the Plumbers' Trade Journal Makes Some Timely Suggestions as to How to Get After Business by Up-to-date Methods—Fashions in Plumbing Fxtures—Business Can be Secured by Cultivating the Desire of Women Folks to Have the Most Modern and Sanitary Appliances.

The trouble with the plumber is that he has developed too large a bump of patience, which puts him in the Job class. Instead of creating work for himself and the trade at large, he is content to wait, like Micawber, for something to turn up. If half the enterprise shown by the steamfitters in building up their business were exhibited by the plumbers, the volume of business transacted would exceed many times that of the steamfitters, for there are greater possibilities in the way of plumbing around buildings than there are in heating.

Take one simple little case for example. Thirty years ago the only known and approved way of heating a residence was by means of furnaces. At that time the furnace men had the trade and all that was necessary was to keep it. But the steamfitters wanted the same trade and went out determined to get it. Not one weighty reason or condition did they have in their favor in the undertaking. A direct steam heating plant was more expensive to install, more costly to maintain, required a greater amount of repairs, was attended with a certain element of danger, and what is more to the point, is claimed by many far from being so satisfactory and hygienic a method of warming a residence. Yet, in spite of those seeming insurmountable obstacles, the steam system of heating is the accepted method and the furnace system of heating is regarded with disfavor.

And all this has been brought about by the energy and enterprise exhibited by the business men engaged in the steamfitting business, an energy and enterprise which might well be emulated by the plumbers.

Fig. 1—Old-fashioned Way.

Contrast that state of affairs with the possibility of the plumber in one little direction and see how woefully he has failed to grasp his opportunities by the forelock, or by the tail either, as it swept him by.

The Stationary Lavatory.

In every residence throughout the land some form of wash basin must be provided in each of the sleeping rooms. Ordinarily this takes the form of a portable wash stand, a pitcher and basin and slop jar. In a fair sized house, containing six bedrooms, six of these outfits must be provided, and they must in every way be in keeping with the other furniture and furnishings of the house. Six outfits, such as would be required, would cost anywhere from one hundred and twenty dollars to five hundred dollars, according to the quality of furniture and china desired.

When the rooms are so furnished they lack much of the beauty and most of the convenience of a stationary lavatory in

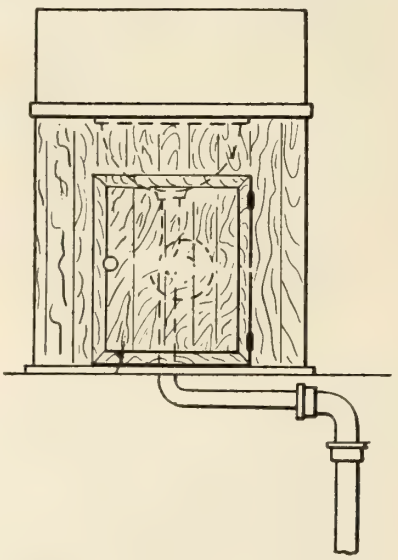


Fig. 2—First Step in Advance.

the rooms. Add to this the fact that the cost of stationary fixtures would not be one bit more than the cost of portable fixtures, and the further fact that one woman out of one thousand would not prefer the portable article to the stationary lavatory, fitted with hot and cold water and waste connection. Then some faint idea of the volume of work ripe for plucking in this one item can be gained.

The question then naturally arises, what have the plumbers done to win that trade? What concerted or individual action has been taken to enlighten the public upon this one interesting point? So far as the writer can see, absolutely none, although the time required and the money expended would have been repaid a thousandfold.

Suppose for instance an enterprising plumber prepared an illustrated booklet calling attention to the great variety in designs of fixtures for this purpose, and mailed it to everybody in his town or district. Would not such a method bear some fruit? If nothing else resulted, the book might fall into the hands of some architects, who having their attention

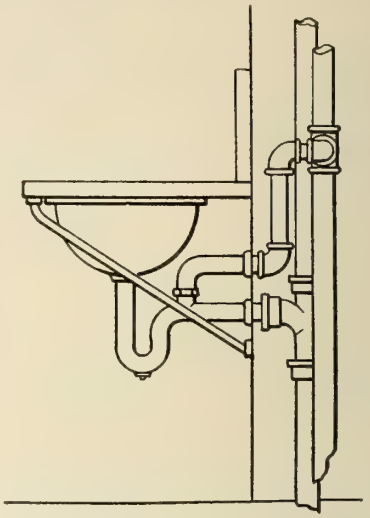


Fig. 3—The Next Step.

called to the matter would thereafter provide for stationary lavatories in the sleeping rooms of every house they planned.

Again, suppose a plumber has the contract for the plumbing in a new house where no such provision has been made. If he drew the attention of the owner to the convenience of stationary lavatories, at the same time pointing out the saving effected, or at all events, that the stationary lavatories with running hot and cold water connection cost no more than equally good portable fixtures with their inconvenience and insanitary features, would not that owner authorize the installation of the extra fixtures, with a corresponding profit to the plumber?

Quoting the Price.

In submitting the proposition to the owner, it would be a good plan which would carry much weight to quote a price on the extra work. The thing is, to follow up an advantage once it is gained. When suggested to the owner, if it strikes him favorably, the chances are he will authorize the work right away. If, however, he has to ask for a bid, and wait a day or two before receiving it, his ardor will have cooled some, and some mossback in the family or among his circle of friends might throw cold water on the suggestion, thereby influencing him against the improvements.

A good plan, when submitting the suggestion and bid, is to merely paste on

the estimate or letter a picture of the fixture you propose to furnish. This appeals to the eye as well as the imagination, and creates in the person a desire to possess the lavatory, as much for its pleasing appearance as for the convenience it will afford them.

Two reasons why this plan has not been followed out to a greater extent heretofore may be found, perhaps, in the character of the fixtures themselves, and the old fogy idea about the dangers of sewer gas. When plumbing first began to come into extensive use, the lavatories then in vogue were made of marble and encased in woodwork. The joint between the basin slab and the basin soon lost its plaster of paris and became an open gaping crevice for the incubation of vermin and to catch dirt and grease. Under the slab, the air was heavy on account of the stagnant circulation, and the cubby hole formed became a catch-all for odds and ends of rubbish.

With the advent of open plumbing and the adoption of porcelain and porcelain enameled fixtures, many of those objectionable features passed away; but there still remained the fear of having plumbing fixtures in the bed rooms, on account of the distantly remote possibility of the water from the trap becoming lost by evaporation. Sanitarians at that time, and some few of them, to this day, even, preach the doctrine of danger resulting from placing fixtures in sleeping rooms; and, while those later day apostles are trailing hopelessly behind the times, still the damage they do to the plumbing business is untold, and can only be offset by the plumber's own efforts in the common behalf.

The Latest Design.

Another method of using suggestion in business is to keep your patrons posted

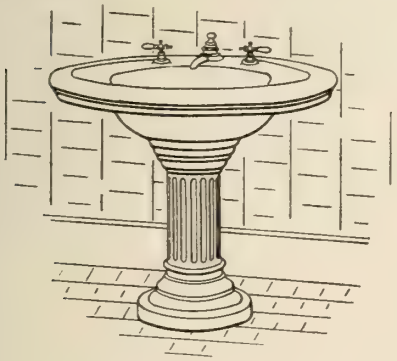


Fig. 4—Modern Lavatory.

in what is good, what is bad and what is the very latest and most approved in plumbing design. It is an old truism that fashion wears out more apparel than the man. What is true of apparel is equally true of everything else with which men have to do. All, particularly the women, take a keen interest in the home, and in no part of the house do they take so much pride as the bathroom. If, then, the patent fashions in plumbing fixtures—for there are fashions in plumbing fixtures, the same as in everything else—were brought to their attention and kept constantly before them, what an unworked field of golden business it would develop. Take for example, a few concrete cases.

In many of the best houses throughout the land, washout closets are still in use. The fixtures were put in years ago, when that represented the highest type of closet design, was purchased as such, and the owners, not having been apprised of anything to the contrary are still under the impression that they have the best. How long, think you, would those people keep such closets in the house if they knew better? Not long, you may rest assured, but there has been no enterprising plumber to call to their attention the later types of syphon jet closets.

The Low Down Combination.

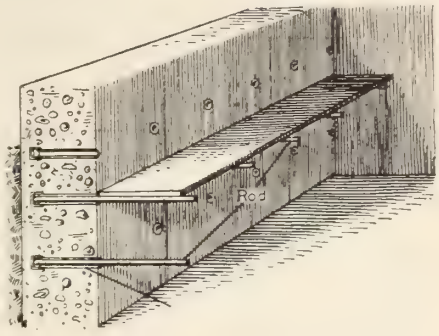
Take another view. The trend of the times is toward the low-down combination with porcelain or porcelain enameled tank. The new fashion is well established and gaining headway every month. Among your customers there are lots of people who object to the overhead tank, and if their attention were called to the low-down combinations with their beautiful snowy white and impervious tanks, very few of them could resist the temptation to purchase one and get in fashion. Such a change would reach the later builder of homes, who had installed their plumbing since the introduction of syphon and syphon jet closets into practice. Indeed, it would even extend to those who already have low-down combinations but with wooden tanks.

* * *

The foregoing are but a few of the many opportunities lying around loose ready to be adopted in practice by individuals or by the local branches of the Association of Master Plumbers, for increasing the amount of plumbing work in the community. Instead of just accepting his share of the work of a community, each plumber ought to take pride in creating new work which would not have been done but for his efforts.

BRACKETS FOR CEMENT WALLS.

When constructing a cellar or basement wall of concrete for a house or factory place iron pipes horizontally in the forms in a row where shelves are wanted so their inside ends will be flush with the finished wall, says Popular Mechanics. The pipe should be ½ or ¾ in. in size, and of such a length as to not quite reach through the wall. It would be well to screw pipe caps on the ends placed in the concrete. The pipes should be placed close enough together in each row to keep the shelf boards from sagging. Fit each pipe with an



Removable Brackets in Concrete Wall.

iron rod of sufficient length to slide in the pipe and have enough projecting on which to lay the shelves. When the shelves are not needed, the iron rods can be pulled out, thus clearing the surface of the wall. Where concrete walls extend all the way up, this method can be used anywhere in the building.

SAN FRANCISCO'S PIPE YARD

A complete pipe yard and pipe testing plant has been acquired by San Francisco for the purpose of making exhaustive tests of all the cast-iron pipe to be used for the distribution of the 21,000,000 gal. of water that city is storing as a precautionary measure. Nearly 100 miles of pipe is required, and this is divided into eight sizes, ranging all the way from 8 in. to 20 in. in diameter, weighing from 515 lb. to 3,988 lb. per 12 ft., and tested to withstand static pressures of from 43 to 325 lb. per square inch. The different sizes and strengths of pipe arise from the fact that they are to be laid at different levels, and fed from different storage tanks whose elevations are 325 ft., 490 ft., and 755 ft., the latter being the Twin Peaks reservoir, which will be used in case of emergency.

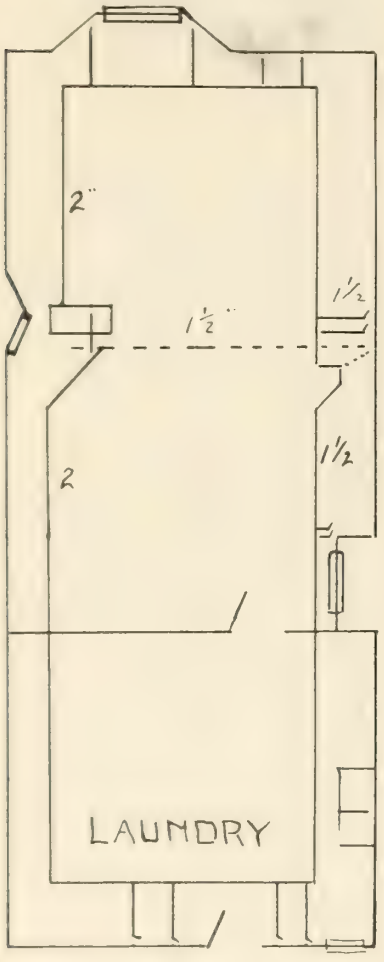
The pipe yard represents an expenditure of about $16,000, and is considered a good investment because it will insure the real worth of pipe costing a million dollars. The yard is equipped with a hydraulic testing press capable of exerting 600-lb. pressure per square inch. The yard is also equipped with a locomotive crane, and an electric traveling crane, which runs the entire width of the yard and piles the different classes of pipe in their respective places.

Cave Dwelling in the Twentieth Century

Description of the Plumbing and Heating Work in a Modern Flat Building—Neat Arrangement of Fixtures — Ventilation and Light Provided for.

Written for the Plumber and Steamfit er by Charles H. Denison.

Thousands upon thousands of dwellings are scattered through the north, south and west sides of the "Windy City." They begin where the tumbling waters of Lake Michigan beat upon the ever advancing water front and extend for miles and miles upon the level, black-soiled, Illinois prairie, these flats,



BASEMENT PLAN

the commonest home of the dweller in the city.

The building which I am about to describe does not contain any thousand dollar bath tubs nor luxuries which would be rated in that class; but it is certainly one of the neatest most convenient and sanitary small flats which it has been my good fortune to observe in some time and I wish to call the attention of the readers of the paper to what can be done along the lines of convenience and compactness. The front of this building is plain, yet has an attractive and pleasing appearance. No "Castle on the Rhine" effect has been sought and the interior of the flat makes good the promise of the front.

In this it differs materially from many modern flats which are all front with a minimum of conveniences inside. As will be observed from the picture it is a two flat building and so a description of either flat will answer as they are similar.

The dining room is the largest room in the flat and is 13 ft. x 13 ft. 6 ins. and contains, on the side opposite the large window, a sideboard which is built to fit the room. This room is heated by a triangular radiator which is so placed as to be most out of the way and its location with regard to the "coldest corner in the room" has been neglected entirely.

Nevertheless it is large enough to heat the room thoroughly as it contains 36 feet of radiation figured by the "2-20-200" rule, which same rule was made use of in estimating the entire steam heating plant in the building. In every other instance (except the bath room) the radiators are located directly under the windows and the radiation is of the wall radiator type.

The steam main can be observed from the basement plan. The party who installed the plant believed in having the mains of ample size and I must say that the plant works to perfection, as in the coldest weather it has not been necessary to carry a pound's pressure, and very few times, the tenants state, has the needle left the pin on the steam gauge.

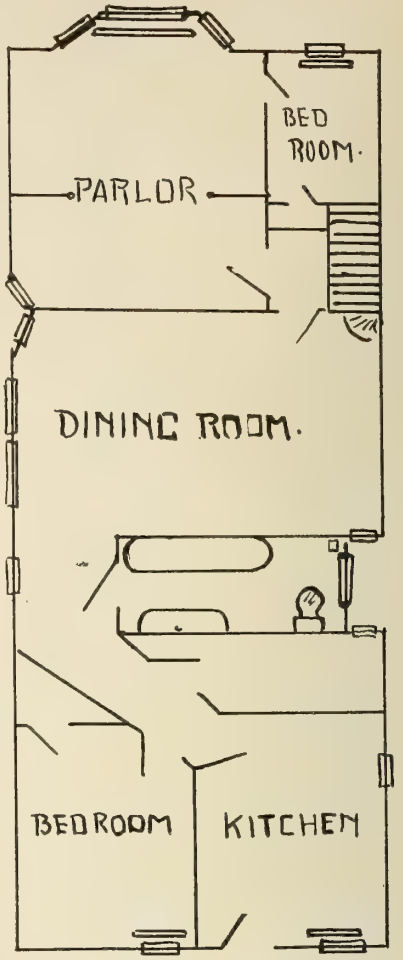
The heating boiler also contains two coils which furnish heat to the range boilers in each flat in the winter time and plenty of hot water is, therefore, always ready for use.

The ends of the mains in the basement are brought together into a wet drip which runs under the cement cellar floor and then connects with the boiler.

The owner of the flat runs the heating plant and figures upon burning from six to nine tons of hard coal per year according to the length and severity of the weather.

The building contains both gas and electric light, speaking tubes and telephones. One should notice the arrangement of the windows, as there is not a dark room in the building.

A skylight being provided in the upper hall gives sufficient daylight to prevent

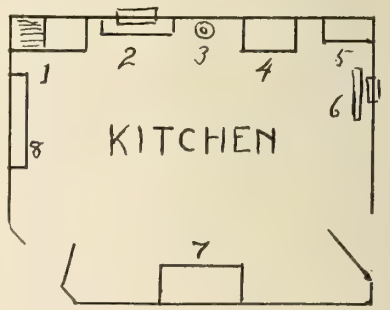


TYPICAL FLOOR PLAN

a dark hall, and also ventilators are provided with which this hallway may be aired.

The both room contains the usual fixtures, viz., tub, lavatory and closet.

The dimentions of this room are five by seven feet. It is provided with means of ventilation by a window and



Layout of Kitchen.

over the door is a transom. It will be noticed that directly opposite the bath room door in the hallway there is a window. This furnishes a clean sweep

of air through the bath room whenever it is desired. The lavatory is combined back and bowl porcelean enameled cast in one piece and supported in one piece and is wasted independently into the main stack, which is a great improvement over wiping it into the closet waste. The water closet is a syphon jet of the high tank variety, as a low down would bring the closet too far out in the room, while the bath tub is a five foot tub.

The radiator, it will be noticed is entirely out of the way in one corner and over this radiator is one of the two towel racks. The wet towels can thus be dried in a very short space of time. Directly over the lavatory and built into the wall is a medicine chest five inches deep and containing six shelves for toilet articles. In the door of the medicine chest is set a plate glass mirror, and at each side is placed both gas and electric lights.

The kitchen dimensions are eight by twelve and one-half feet and for purposes of a more detailed description I have drawn out a separate plan of same and numbered certain points to which I will now call attention.

By looking at this plan one will notice that the kitchen has two windows and an outside door. This not only provides plenty of ventilation but lets in the rays of sunlight, for the door has in it panels of glass. That kitchen can be aired out thoroughly in just about ten seconds' time.

The walls are painted and the floor of hard maple. You could turn the hose full play in this room for a brief space and do little damage. For the purpose of more thoroughly removing the odors and smoke which of necessity arises when cooking is being done, a smoke hood hangs, at a proper height, over the gas range and is vented into the chimney.

Figure one shows the location of the sink. This sink is an iron porcelain enameled affair with a 16-inch back, the drip board being also of the same material and a rubber pad is used to prevent an unnecessary breakage of the china.

Figure two shows a small drop table made fast to the wall directly under one of the kitchen windows.

Figure three shows the range boiler. This, as previously stated, is heated from the boiler in the basement in the winter time while in summer a gas burner installed directly under the tank will give thirty gallons of hot water at any time in less than twenty minutes.

Figure four represents the gas range which has five burners besides the two which heat the oven, which bakes anything with the utmost dispatch and perfection. The tenants' gas bill in either flat runs from $1.20 to $1.70 per month and averages about $1.40 per month the year around, while the electric light bill runs about $1.60 per month. Figure five shows the refrigerator, which uses from twenty to forty cents worth of ice each weak in the summer season, according to the temperature of the weather.

Figure six represents the radiator in the kitchen, installed directly under the kitchen window on the outside wall.

This radiator is not needed and has never been used since first tested out.

The range boiler furnishes enough heat; in coldest weather to prevent the fixtures freezing in the room and at other times the room derives enough heat from the gas range to render it warm enough for occupation. Therefore, the two kitchen radiators are an expense which could be omitted in a similar flat.

Typical Modern Flat Building.

Figure seven shows the kitchen table, which is detached and can be located anywhere. Figure eight is a closet for various kitchen utensils and such dishes as are not desired in the dining room. The pantry will be observed on the opposite wall from the kitchen cupboard, and there is a sliding door at the back of this cupboard which gives access directly to the pantry.

Besides the other conveniences mentioned, at the rear of each flat are two large porches.

The second flat is occupied by two persons and the first flat by four. At all times have both flats been well heated and no trouble of any kind has ever been experienced from the plumbing nor the laundry which is located in the basement.

WHERE ARE THE VALVES?

At a recent meeting of the American Society of Mechanical Engineers a suggestion was made to use a definite code of colors in painting power house piping. The idea is an excellent one that could easily be carried out.

A chart of the works could also be made showing the location of all pipes. The colors on the charts would correspond to the color of the pipes in the power plant and works. Such an arrangement would be of the greatest benefit in tracing pipes and locating valves.

If a break occurs in a steam pipe and no one knows where the valves are, and the pipes are run underneath the floor or anywhere, there is a rush to find the valve. A valve is found but no one knows which one it is and it is turned off. At the same time another discovers another valve and it is turned off, yet steam still issues from the broken steam pipe, scalding men and carrying destruction with it.

If different pipes have their distinctive colors, a different picture presents itself. Anyone can trace the pipe by its color and the valve belonging to the pipe can easily be located.

Then again, if a break occurs in an underground pipe, and if there is no chart, no one knows where the pipe enters the building. The pipe was laid by a contractor and no one paid any attention as to its location. It is therefore essential in case of accident, that every factory should have a map of the power plant and factory showing the location of all piping, its use, size, depth, etc. They will then be prepared for any accident that might occur and damage to valuable machinery and injury to men will be reduced to a minimum.

U. S. RADIATOR MERGER.

A merger of five of the largest radiator works in the U. S. has been effected, the union to take effect May 1. Companies in the merger are the United States Radiator and Boiler Co., Pittsburg, the United States Radiator Co., Dunkirk, N.Y., the United States Heater Co., Detroit, Mich., and the Herrenden Manufacturing Co., Geneva, N.Y. The radiator department of the J. L. Mott Co., New York, is also said to be in the merger.

International President J. T. Kinsella, of the International Association of Steamfitters and Helpers, with headquarters in Chicago, has just organized the journeymen steamfitters at St. Thomas, and other organizations are being formed in London, Montreal, Vancouver and other cities. The association formed a branch in Toronto during the plumbers' strike two years ago.

Large Water System Being Installed at Ottawa

Pneumatic Plant Being Erected on Hillside, Water to be Pumped up From a Well Below—36-foot Tank to be Buried in the Ground, With One End in Pumping House—Tenders Now Being Called for.

The fire that utterly destroyed the handsome buildings of the Ottawa Golf Club last fall provides a striking example of the inefficiency, and in most cases, absolute uselessness in an emergency of the old-fashioned elevated tank system of water supply.

In this instance the fire was discovered in its early stages, and, had an efficient water service been available, there is no doubt whatever that the buildings could have been saved, but while a considerable quantity of water was in the tank the pressure was so low that nothing could be done and the buildings were entirely destroyed.

At the present time contractors in every trade are rapidly rushing to completion what will be one of the most handsome and complete golf club buildings on the continent, but having learned a very expensive lesson, the members have insisted on one radical departure from the old plan, viz., the instalation of a pneumatic water service plant, which will provide water, not only in large quantities, but at a pressure equal, if necessary, to that found in any Canadian city, and have awarded the National Equipment Company, Toronto, the contract for the whole system, which will be installed under the direction of this company by a local plumbing concern, the tenders now being called for.

Some difficulty was experienced in obtaining a sufficient supply from an artesian well. It was expected by the club officers that water would be struck at 300 feet, but having sunk the well to a depth of nearly 600 feet, the amount of water obtained was so limited that the idea of taking it from this source was temporarily abandoned, and it is now being taken from a shallower well situated on the property about 40 or 50 feet below the point on which the clubhouse stands.

Figure 1 is a sketch through A—B of the plan figure 3 and shows in detail the whole equipment that is being installed. The tank, which is 36 feet long, which incidentally is the longest pneumatic tank in Canada, is buried underground with the head projecting into the pump-house, which is of cement, and partially buried in the hill; the pump being placed in the basement of the pump-house, which, as will be observed, is entirely surrounded by earth and consequently will be frostproof.

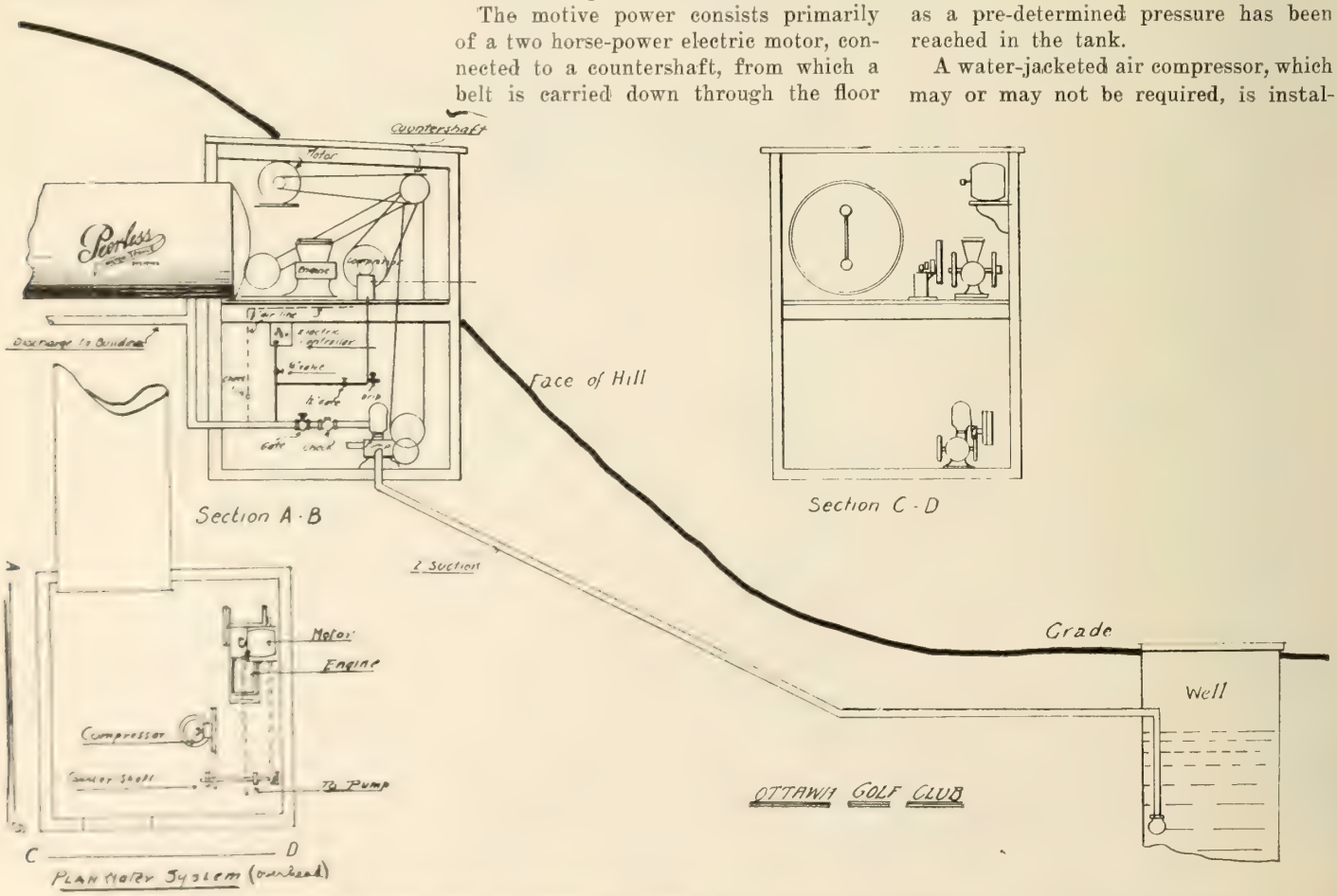
The motive power consists primarily of a two horse-power electric motor, connected to a countershaft, from which a belt is carried down through the floor to the pump in the basement. The pump is connected by 2-inch suction pipe, running direct to the well and fitted at the bottom with a foot-valve. The discharge pipe from the pump is taken straight through the wall of the building, and up through the soil into the bottom of the tank, and at a point just below the tank a 2-inch discharge is taken straight to the club house building. It will be seen, therefore, that no portion of the piping system is exposed to the frost.

The motor will be automatically controlled by an electric switch—also placed in the basement—which is connected directly to the discharge pipe from the pump by a ¼-inch pipe fitted with a globe valve. This switch contains a diaphragm similar to that used on a steam boiler damper regulator, and when forced up by the pressure in the discharge pipe throws the switch out, allowing the motor to stop.

When the pressure goes down to 20 or 30 pounds, according to the desire of the operator, the diaphragm recedes and the switch is thrown in, starting the motor and pump, which will continue in operation until the pressure is sufficient to force the diapragm up and throw the switch out again.

Providing against all contingencies, a two and one-half horse-power gasolene engine is installed and kept ready for immediate use should anything happen to the electric power at any time, and connected to this engine is also an automatic switch, which will stop it as soon as a pre-determined pressure has been reached in the tank.

A water-jacketed air compressor, which may or may not be required, is instal-



Sectional View From Well to Tank on Hillside, Overhead Plan of Water System and Front view of Engine House.

led and belted direct to the countershaft. This air compressor, which, however, is only used in connection with large systems, is fitted with a ½-inch pipe, which will permit a small stream of water to flow through the water-jacket for the purpose of keeping it cool while in operation, and is fitted at a point below the floor with a drip cock, so that the water can all be drained off when not in use.

The sectional cut C—D indicates from another point of view the relative position of the tank, motor, engine, pump and compressor, and this, taken in conjunction with the plan view shows the relatively small area required to install a comparatively large plant.

The only valves used in connection with this system are the foot valve on the suction pipe and the check and gate valve on the discharge from the pump. The check valve is placed near the pump with the gate valve between it and the tank, so that should the former at any time need repairs the latter may be closed off and the check taken apart without emptying the tank.

The system is in every way as complete and thoroughly up-to-date as it is possible to make it, but notwithstanding this, its simplicity and the ease with which it can be installed will appeal to the average plumber, and as will be clear, with the automatic operation of the motor and pump practically no attention, beyond the occasional oiling of the working parts, will be required.

DISINFECTION OF RAILWAY CARS.

The running of a railroad in Germany is evidently accompanied with unpleasantness, if one may judge from the accompanying photograph. The Potsdam shops, which are responsible for the proper maintenance of rolling stock, have been confronted with the difficult task of disinfecting the cars. It seems that the coaches which return from Russia are literally a-swarm with vermin. Even after the cars had been cleaned with true Teutonic thoroughness, there was still the possibility that living disease germs might lurk in the walls and hangings. It was therefore the practice for some years to take down all the upholstery, curtains, etc., and to clean everything thoroughly. Naturally, the expense involved was heavy, and the cars were withheld from service for a considerable time. Moreover, there was also the danger of infecting the shops and other cars.

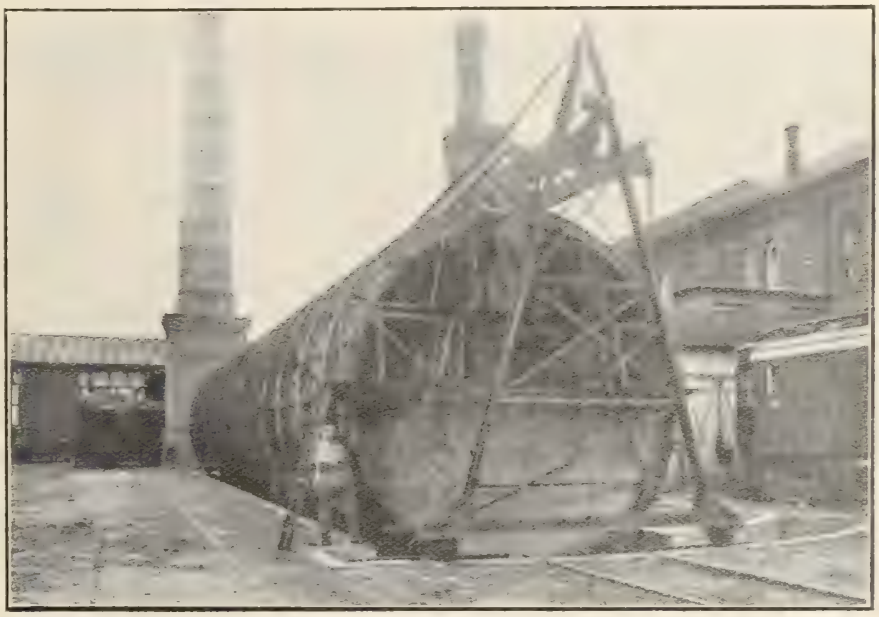
The problem seems to have been successfully solved by Julius Pintsch, who applied to the railway car a principle of disinfection which has been successfully employed on vessels. His disinfecting apparatus consists of an iron cylinder built up of cast iron annular sections, of 16 feet internal diameter. The inside length is about 72 feet. The cylinder is so stoutly constructed that it can easily support without deformation a 30-ton car.

During disinfection the air within the cylinder is considerably rarefied by a pump, and as a result the outer air exercises a pressure of about 1,900 tons on the disinfecting cylinder. Since the apparatus is heated during disinfection, allowance has to be made for expansion. Hence the cylinder is mounted upon rollers, so that the apparatus can yield to an extent of about three-quarters of an inch in length, which is the amount of expansion.

Before it is run into the cylinder, all the windows and transoms of the car are opened. By means of a crane a two-ton closure is brought against the open end of the cylinder. A rubber gasket is employed to make the closure hermetic. Huge bolts hold the closure, gasket and cylinder together. Steam is blown into the interior of the cylinder. Two hundred and fifty steam pipes line the interior of the cylinder, all receiving their supply from the main pipe. The total length of all these pipes is about 1¾ miles. In order to heat the air within the cylinder quickly and uniformly, two blowers are set in motion, so that all the air is brought in contact with the heating tubes. Even during the coldest weather the temperature within the cylinder can be raised to 140 deg. F., in from one to two hours. In order to heat an entire coach to this temperature, about five hours is required. After the car has reached the proper temperature, the air is pumped out of the cylinder until a vacuum of 70 to 74 centimeters of mercury under the normal pressure is obtained. At this atmospheric pressure water will boil at 104 deg. F. Hence all moisture is evaporated from the car without injuring the parts by the excessive heat. In no other way is it possible to kill vermin effectually. The upholstery, curtains, hangings, etc., are not in the least injured.

For very special purposes the cars may be disinfected with formaldehyde gas. At the very first attempt, a car was thoroughly purged of vermin. To make assurance doubly sure, and to test the efficacy of this formaldehyde disinfecting method, a glass vessel full of the living insects had been purchased from a professional vermin-exterminator in Berlin. This vessel was placed in the car and covered with cotton and linen. The insects were all killed.

The apparatus has also been employed to dry out wet cars, as well as cars pervaded with the unpleasant odor of cooking. After twenty-four hours they were quite ready for service again. In this case no formalin was used.



Sealing Cylinder With Two-ton Gasketed Closure Before Exhausting Air and Turning on Steam to Disinfect Car.

PLUMBER WASN'T AFRAID.

Michael Dugan, a journeyman plumber, was sent by his employer to the Rosedale mansion to repair a gas leak in the drawing-room. When the butler admitted him he said to Dugan:

"You are requested to be careful of the floors. They have just been polished."

"They's no danger iv me slippin' on them," replied Dugan. "I hov spikes in me shoes."

TESTING OUT VACUUM WORK.

Editor, Plumber and Steamfitter,—I have been greatly bothered the last few days in testing out and making tight the leaks on a small vacuum job of about twelve radiators. It bothered me to locate the leaks and if you can give me any suggestions of a practical nature I would be very much pleased to read them in your questions and answers.

D. E. F.

Toronto, April 20. It is a strange thing that people make so much fuss and feathers about this vacuum steam work. It certainly is easier and faster work than running gas pipe and no one kicks now-a-days on proving up a gas job. Take this very letter and instance: if the party had simply plugged up the vacuum job and put on the apparatus used for testing for gas leaks, and gone after the job in earnest, he could have located all the leaks in less than half a day and probably have gotten the job tight in another half day. That is the way we should go at such a job. In case any pipes are run behind the lath and plaster they should be tested before they are so placed.

Try and use a little head work in tackling such problems and you'll be a winner some day.—D. C.

PAINTING RADIATORS.

Editor Plumber and Steamfitter,—Can you tell me in an early number of the questions and answers part of your paper whether it is better to paint or bronze steam and hot water radiators.

What I refer to is which way will they deliver more heat? I have always believed the bronze best because it is so much thinner and does not put so heavy a coating on the radiators.

Kingston, April 26. Dominion.

It has been proved by some very recent experiments that from the heating standpoint bronzing is the worst possible way in which to decorate radiators. Almost any old kind of paint applied is better and in particular if it has a good body of lead. The thickness of the coat has nothing to do with the amount of heat thrown off as this depends entirely upon the radiating qualities of the material. The efficiency of radiators can be greatly improved by using paint even if you paint directly over the bronze.—D. C.

TRADE PROBLEMS ANSWERED.

Inquiries Solicited From Readers, Who Run Across Problems Which are Unusual—Just as You are Interested in Reading the Questions Asked by Another Man in Your Trade, so Will the Other Fellow be Interested in Your Problems—Send the Queries Along and We'll Answer Them—or try to.

TAPPING A WATER MAIN.

Editor Plumber and Steamfitter,—Will you tell me in the next issue of your valuable paper where the hole should be tapped on a water main? I notice that some men tap on the side and some directly on top. which is better?

Galt, April 18. S. Y.

We prefer to tap the main directly on top. I understand that when using a lead connection many prefer to tap the main on the side at about the angle that would true up a 45 degree connection; but lead or no lead the tap is made easier on top and there is not so much danger of the machines going wrong. When iron connections are used the top connection is about only one that can be made with any degree of ease. Use two ells and a short nipple in such a case and not one ell facing directly into the ditch.—D. C.

CUBIC INCHES IN GALLON.

Editor Plumber and Steamfitter,—In your issue of April 1st, on the subject of figuring the capacity of tanks, you gave the inquirer as a rule to figure 231 cubic inches in a gallon. Will you kindly explain why you do not use the Imperial gallon as a standard? A. E. W.

Shelburne, April 17.

Our correspondent has one on us. "D. C.", who answers the questions published in this department, received most of his training in shops in United States cities. Consequently in figuring out the number of cubic inches in a gallon he gave "wine" instead of "imperial" measure. In "wine" measure there are 231 and in "imperial" there are 277.2 cubic inches in a gallon.—Editor.

Features of Cleveland's New Plumbing Code

Old and New Methods of Laying Out Double Bathroom Plumbing on Two Floors, Illustrated by John K. Allen, in Domestic Engineering—A Toronto Writer Criticizes the Complex Nature of the New Regulations.

Editor Plumber and Steamfitter,—While reading over some of the "Plumbing Codes" or laws of the various cities, I was very much struck with the recent house drainage and plumbing portion of the building code of the city of Cleveland. One would naturally expect that as this one is of recent date that it would be an ideal one, one that almost any large city might with very little change adopt, but we find quite the opposite. While it has many good points, it is so cumbersome and complicated that the ordinary plumber could not be expected to comprehend its meaning so as to construct his work without getting into endless trouble with the powers that be.

There are so many exceptions and different ways prescribed for installing the same fixture in different locations in the same building, that one is led to believe that the committee which drew up the same, was composed of gentlemen with vastly different ideas of how the various fixtures should be

installed, and what material should be used in installing them. Besides one would think that the inspector who was sent to inspect same would have considerable trouble interpreting the law, and applying it without considerable friction and argument.

Law Should be Simple.

This should not be the case. The laws should be drawn as simple and plain as possible so that the man with an ordinary education could grasp its meaning. But as this one stands a man would have to have good reasoning ability and a fair technical education or be content to follow the other fellow :

One of the best proofs that the new code is not workable is to be found in their own act, when after the first edition has been issued less than a year they proceed to amend no less than 26 sections of the same, in some cases striking out whole sections. And still it is hard to find out what they mean.

The new code has no less than 304 sections, covering 117 pages of a book 6½ in. by 5 in. in size. Surely it could be condensed and made more intelligible if it were given into the hands of a committee composed of plumbers only.

Philadelphia Lawyer Needed.

The following are sections which might be simplified :

"Local vent and ventilation pipe. —Rectangular local vent and ventilation pipe may be used, if its area is equal to that of a square whose sides are equal to the diameter of the required circular pipe, tabulated in section 1120-42 and 1120-44 ; provided that when the ratio between the lesser and greater size of such rectangular pipe, exceed 1 to 2, the equivalent square area shall be based on the diameter of the next larger size of pipe, but if such ratio exceeds 1 to 3, the pipe or flue shall be proportioned by any well established technical formula."

Then again the code will not allow a trap to be placed on main drain used for sewage, and goes so far as to force the removal of the main trap from old drains if there is a properly ventilated soil pipe stack in the building, regardless of condition of such drain. Yet in another section they allow automatic back pressure hinged valves, which I think no person will say does not form a trap or acts as a trap, i.e., prevents the sewer acting as an air inlet to the system.

In one section the code says "lead pipes may be used for cold water supply and flush pipes, but their use otherwise shall be restricted to the short branches of soil, waste and vent pipes, etc." ; while in another section it says : "All water supply pipes for a plumbing system shall be galvanized iron or brass." And still another section says : "All main and branch soil, waste, vent and back vent pipes shall be of iron, brass, copper or lead."

These sections, in my opinion, conflict. I could quote many others but think these will be sufficient to prove that it would be hard to find out the exact meaning of many sections.

Some Good Features.

But as I said in the beginning of my letter this code has some good points, and among them are the following :

Tabulating the number of fixtures to be used on certain size pipes.

Giving size of trap and waste to be applied to certain fixtures.

Local ventilating w.c. apartment and certain plumbing fixtures.

Marking size and weight on all cast pipe and fittings.

The dispensing with the use of tile or crock pipe for drains from plumbing fixtures.

Specifying what amount of work can be done and called repairs.

Specifying that grease traps must be placed under certain sinks.

Specifying the kind and number of plumbing fixtures for each separate apartment and separate ones for the different sexes.

Now, Mr. Editor, I have trespassed enough on your good nature and space besides, I think, I have given enough examples to prove my assertions in the fore part of my letter, i.e., that the code as it stands is not ideal and could be made more readable to the average man. At some future date I may again trespass upon your space.

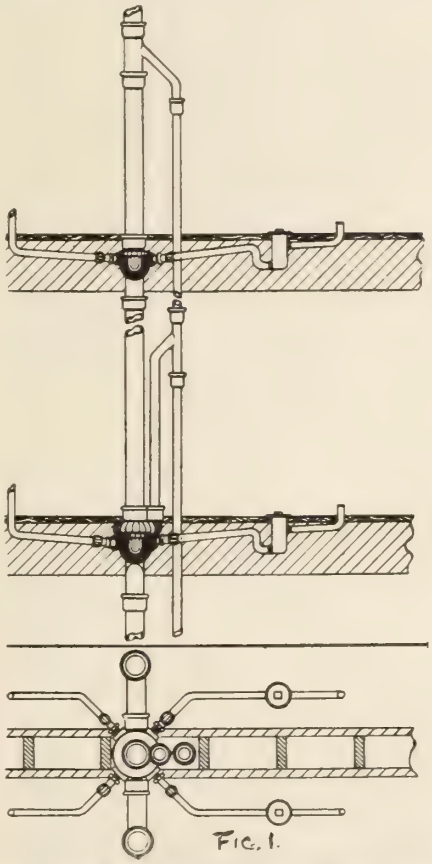
"THOMAS."

Toronto, April 19.

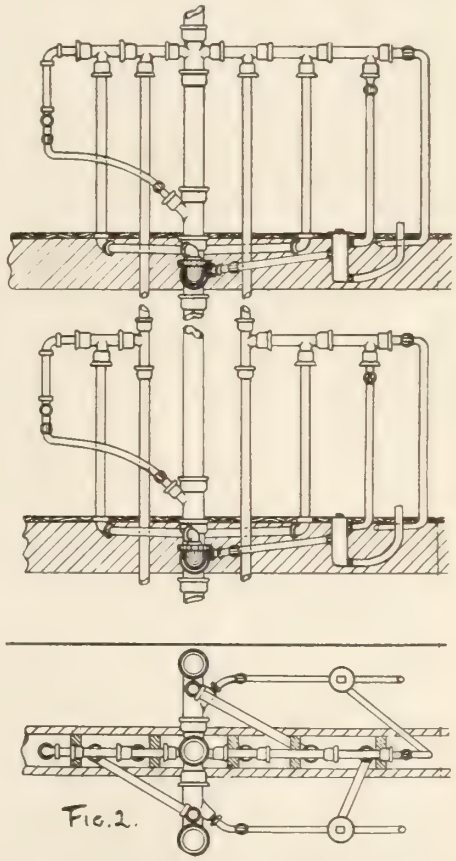
THE CODE ILLUSTRATED.

John K. Allen, writing in the "Domestic Engineering," recently, said : "The Cleveland code has many features which are unique. Perhaps its most striking characteristic is the extent to which it simplifies plumbing design. In approving this feature of the code I am aware that I shall be criticized by those of my readers who believe in the multiplicity of pipes ; who would have soil pipe stacks, vent stacks, revents, back vents, etc., all with the belief that it is a good thing to complicate plumbing because it makes it more expensive. But I am not of that school. I believe that the simpler and more inexpensive plumbing can be made—all the time bearing in mind that only high-grade material and labor should be used—the more of it the consumer will buy. This is true in all other lines of merchandising, and plumbing is no exception to the laws of economics which make the fact true.

"But there is still a weightier reason



Simplified Method of Double Bathroom Plumbing on Two Floors as Allowed by New Cleveland Plumbing Code.



Construction of Double Bathroom Plumbing on Two Floors Before New Code Was Adopted at Cleveland.

why plumbing should be simplified. It lies in the purpose for which plumbing is constructed, which is the removal of wastes from buildings intended for occupation. The very nature of these wastes, subject as they are to rapid decay, makes it desirable to remove them from the building as quickly and as completely as possible. In a complicated system of plumbing the removal of wastes and accompanying odors is not rapid. Hence the necessity for simplification."

In the Plumber and Steamfitter of April 15 the details of the new code were illustrated in a large chart and another illustration is shown herewith, this sketch showing to what degree simplification of plumbing can take place under the provisions of the Cleveland code. At the right side of the sketch is shown the construction for a double bath-room on two floors as required before the code was adopted, while at the left is the construction allowed under the new code.

Readers are eequested to send their views on the points raised in the two illustrations referred to and in the letter from the Toronto correspondent.

IT PAYS TO ADVERTISE.

C. Leisemer & Co., Mildmay, Ont., say they are requested to figure on a job with a watercloset specified to be a plate 1956 in Wolff catalogue. They have never heard of this firm and want their address.

L. Wolff Mfg. Co., 601-627 West Lake Street, Chicago.—Editor.

Methods of Tracing Sources of Water in Cellars

Dr. George M. Price, Sanitary Medical Inspector of the Health Department of New York City, Gives Some Interesting Information on this subject.

The degree of dampness of the cellar, or the actual quantity of water therein is an important point, and is the first thing to be inquired for. Very large quantities of water will, as a rule, point to fresh water leaks, or tide water.

A permanently wet condition of the cellar points to ground water, a less constant wetness points to sewage or water service leaks, and a periodicity in the appearance and disappearance of the water points to tide water, or if the water appears after rain storms, leakage of surface water into the cellar is indicated.

This should be looked for, as serving to indicate the level of high or low tides, or fluctuations of the ground water level. A steadily increasing level of the cellar water points to water service or sewage [illegible].

Find Where Water Enters.

The point of entrance may bear an important relation to the source of the water; moreover it may indicate the direction whence the water probably comes. Of course, much care is necessary in drawing conclusions. No absolute reliance should be placed upon any one factor. Because the water seems to come from a certain point, it does not necessarily follow that the cause of the leak will be found at this point or in that direction. Water always travels along the path of least resistance, and its course being influenced by a variety of factors, its entrance often occurs at [illegible] it occasionally becomes necessary to bale out all the water from the cellar in order to discover the original point of entrance. Where the water is very shallow, and the cellar floor even, the direction of flow can readily be ascertained by letting a few drops of tallow from a candle fall upon the surface and noting their behavior.

As a rule (but not without many exceptions) the deeper the point of entrance of the water into the cellar the further the source of the water from the house. Much depends, of course, upon the lay of the ground and nature of the soil. Fresh water leaks usually appear very deep; surface water enters at points on the cellar walls; sewage water appears at the depth of the sewer pipes.

The mode of entrance of the water into the cellar depends also upon its source. Surface water usually comes in at several points through front or rear of cellar, or from the side of the house if the ground slopes towards it; it does not come through one particular point, but through the whole area. Tide water, coming through the ground, will appear simultaneously through floor and walls of the cellar. Ground water appears through floor of cellar. Water from service leaks comes in through one or but few points, near the cellar floor. Tide water breaking through sewer pipes will enter through these pipes, particularly near handholes or traps, which are forced open by the tidal pressure. Sewage enters either by way of house drains underneath the cellar (a usual point being at the junction of vertical soil pipe with house drain); or by way of the street or yard at the point of entrance or exit of sewer pipes.

Appearance of Water.

The general appearance of the cellar water may give some indication of its source; thus clear water points to springs or water service leaks; a foul liquid points to sewer leakage; turbidity points to ground water and a greenish salty water to tidal influence. The foregoing are some of the data which should be observed in tracing the sources of cellar water. We next examine the practical tests which may assist in the search.

As cellar water may be due to several coexisting causes, the general appearance and physical properties will not always point to the exact sources. Sewage may have been greatly purified before reaching the cellar and thus have the appearance of fresh water, while fresh water may be so contaminated by sewage as to give a wrong indication of its source. Tide water may be mixed with surface rain water, ground water with sewage, etc., which increases the difficulty of tracing the true source.

The chemical analysis of the cellar water is a more precise and scientific test. Such an examination determines the percentage of chlorides, calcium salts, sulphates, free ammonia, nitrites, etc., and greatly assists in differentiating between tide, ground, surface and other waters.

The sound test is applicable only to fresh water leaks, and is based upon the physical fact that water escaping under pressure from a pipe will produce a distinctive, hissing sound, which may be audible at a distance, owing to the conductivity of the pipe system. This may be better heard upon putting the ear to the pipe or to the ground over same. Once heard, the sound of a leak cannot be mistaken for anything else. It is comparatively easy to discover a distant leak in the water pipes by listening to any part of the water supply piping in the house, an underground leak in the yard pipes can often be discovered by listening at the yard hydrant.

Tests to Discover Source.

The shutting off of the water supply is another valuable test, applicable, however, only to fresh water leaks from service pipes. In fact, it is the best and most certain test as applied to such suspected leaks. By shutting off the supply at the main stop cock of a house from which a leak is suspected and observing the result upon the water in the affected cellar we can judge whether the leak comes from the house in question; if the water in the affected cellar diminishes and eventually disappears, then this house is the true source of the cellar water; if the quantity of water

does not diminish, the cause lies elsewhere. To draw correct conclusions it is necessary to wait several hours, and sometimes longer, before again turning on the water, as it often takes considerable time for the water to reach the cellars.

The color test is applicable only to sewage leaks, or leaks from sewer and drain pipes. The test consists in dropping a suitable quantity of some distinctive dye, such as uranine or fuchsine (the former turns green, the latter red when dissolved in water), into the drain from which the leak is suspected, and observing the coloring of the water in the affected cellar; if it turns red or green, according to the dye used, it is a certain indication that the suspected pipes are defective. Some time must be allowed for the coloring matter to reach the affected spot, and many differ- pipes may have to be tested before the defect is located.

The foregoing tests greatly assist in determining the source of the water in affected cellars. The following is a brief summary of the typical properties characterizing the several sources of cellar water:

Surface Water Intermittent.

The quantity of surface water is usually great; it is not constant, appearing after storms, thaws, etc., and disappearing after prolonged dry weather. The water enters the cellar at the front or rear of house, usually at the surface level, through cellar gratings, doors, windows and through walls at junction with ground. The general appearance of the water is turbid, due to the sand and rubbish it usually carries along. In uncomplicated cases this source may be readily discovered and no chemical examination is necessary. When surface water is mingled with water from other sources the others must first be eliminated before it can be detected.

Ground water is the most difficult to trace. It appears in cellars of houses situated upon marshy, boggy, water-logged soil, or filled in ground; also in very deep cellars which are below the level of the ground water in the vicinity, and in poorly constructed houses. The quantity is not very great; it has no tendency to rise above a certain level; the water appears at the bottom of the cellar at the lowest point, such as pits in front of boilers, etc., and throughout the whole floor of the cellar, if same is level. The general appearance of the water is turbid, it is usually mixed with sewage, and near shores may present the appearance of sea water. A chemical examination will differentiate ground water from fresh water leaks.

Cellar water which owes its origin to underground springs and streams will be more constant, rise to a higher level, may enter through a number of different points and may have the appearance of fresh water. This is the most difficult to trace, and can be discovered only upon elimination of all other possible sources.

Tide water can be looked for in houses situated near the shores, when the cellars are deep and below tide level. Tide water appears periodically and rises and falls with the tide; the quantity of the water in the cellar is large, entrance is effected through walls and floor of cellars, or through street and house sewer pipes. The physical characteristics are the same as those of sea water.

Leaks from water service pipes are also difficult to trace. Fresh water leaks do not depend upon the situation of the house, although deep cellars are more easily affected. The amount of water in cellars due to such leaks is very large, and is apt to be constantly increasing. The point of entrance is usually very low, near the floor or underneath it, and usually at but one or at very few points.

Leaks from sewer pipes are not, as a rule, difficult to trace, unless they occur at very remote places or in pipes the existence of which is unknown and unsuspected. A color test is decisive for suspected sewer and drain pipes, but in this, as in other cases, many fruitless tests may be made upon various fixtures before the water is traced to its true source.

FIGURING PLUMBERS' PROFITS.

By A. P. Elder.

There are three items that enter into the cost of every undertaking, material, labor and expense, and they must be carefully ascertained and provided for. An estimate book is indispensible and a careful check should be kept upon all contracts to ascertain just how near the estimates came to the final cost of the work. This is a healthy guide to assist in figuring the next job and will usually show that many items are omitted from every estimate which finally have to go in and be paid for by the contractor.

The greatest stumbling block in the plumbing business, however, seems to be the difficulty in figuring overhead or fixed expenses of running a business. This item varies but is "Like the poor always with us," and it should be carefully computed and the percentage of expense should be added to every contract. In a business that aggregated $7,500 last year this would most likely mean that the expense account would look something like this: Rent, $300; bookkeeper, $600; horses and wagon, $180; telephone, $120; water, light and fuel, $100; charity and subscriptions, $50; advertising, insurance and incidentals, $150; total $1,500. This shows 20 per cent. of the receipts go for expenses of various kinds necessary to run the business, so that in making up an estimate of cost of all undertakings after the cost of the material has been ascertained and the labor computed, 20 per cent. of the aggregate must be added to get the bare and actual cost of the job.

It is up to the plumbing contractor to determine what constitutes a reasonable profit that will provide a competency for declining years upon the business under consideration.

A man starting in business at 21 should, for the next 29 years, if possible, lay by $1,000 per year in order to have a sufficiency to maintain himself during the rest of his lifetime, so that at least 15 per cent. should be added to each job after having computed as above stated, the material, labor and overhead expenses.

Supposing the items are as follows: Material, $100; labor, $40; overhead expenses, $28, or a total of $168, add then 15 per cent. or $25, and we have $193 as the lowest safe and fair proposal to make; if you do not provide the item of $28, you will surely fail in time and if you do not provide for the item of $25 you will find yourself at the age of 50 years with earning capacity greatly impaired and no provisions for a future that may last 20, 25, or 30 years. It is every man's duty to provide an education for his children and assist them to a start in life and to provide a fund to care for himself and wife in old age. How many plumbers are doing this?

Few Rich Plumbers.

Dun and Bradstreet show that but a small percentage of the plumbers have any rating at all, and it is the rarest thing to find a plumber with a rating above $10,000. This should not be the case.

If plumbers would study the methods of the banker, lawyer and the doctor and mix more with his competitor, rid his mind of petty jealousies and always keep in mind that his business must show a profit or final disaster will be the result—a great step in the right direction would be made.

If your expenses are 25 per cent. of your gross business and you add 25 per cent. to every transaction you are actually losing 5 per cent.

Figuring cost of doing business at 20 per cent. on gross sales, goods marked above cost, 25 per cent. show an actual profit of 5 per cent; at 33 1-3, 8 per cent.; 40, 13 per cent; and at 50, 30 per cent.

Gossip of the Plumbing and Heating Trade

Items Gathered in all Parts of Canada—Letters Invited From Subscribers, Giving Particulars Regarding Changes in Firm Names, Contracts Secured, Novel Methods of Advertising or Other News—Photos of Anyone or Anything Connected With the Trade Also Welcomed.

F. Gaulin & Co., tinsmiths, etc., Beloeil, have been registered.

The Canadian Brass Co., Ltd., Galt, are introducing a new basin cock to the trade.

Armstrong Bros., plumbers, Midland, are succeeded by Armstrong Bros. & Frank.

Wm. M. Morrison, of St. John, left last month for Calgary, where he will engage in a plumbing business.

Frank Conaughton, of the Standard Sanitary Mfg. Company, has returned to Montreal from a trip to Quebec.

W. L. Burgis, plumber and steamfitter, Aurora, Ont., has assigned. A meeting of creditors was held on April 21.

E. Fawcett, of Wawanesa, has accepted a position as tinsmith in L. H. Phillips hardware store, Cartwright, Man.

Wm. Knight, of the Amherst Foundry Co., Amherst, N.S., paid a visit to the Toronto branch of his company last week.

Albert Donnelly, for several years a plumber with the R. Wright Co., Toronto, has entered the employ of E. S. Coppins, Woodstock.

Elliott Bros., Kingston, were successful in securing the contracts for the heating, plumbing and galvanized iron work on the new school at Bath.

J. A. Norris was fined $5 and costs in the Toronto police court this week for a breach of the plumbers' by-law, having made changes without first securing a permit.

The John Ritchie Co., Toronto, have secured the contracts for the plumbing and heating work on the new wing of the Ontario Parliament buildings, the figures totalling to about $50,000.

R. A. McKiggan and George A. Davison, hardware merchants, plumbers and tinsmiths, Brantford, have dissolved partnership. The latter will conduct a hardware business in Sicimous, B.C.

William Brady, who for many years conducted a plumbing business in Montreal and then joined the Montreal Light, Heat and Power Co., died suddenly on his way to work.

Archie Sullivan, head salesman for Carter Bros., Picton, Ont., for a number of years, has accepted a position with the Gurney Foundry Co., Toronto, and will assume his duties with the latter firm on May 1.

A. L. McInnis, who for nine years has been connected with E. S. Coppins in the plumping and heating business, at Woodstock, has secured premises and will start in the plumbing business for himself at that place.

John G. Kelly, a former Orangeville boy, has opened an establishment for plumbing and heating supplies at 525 East 149th St., New York. Mr. Kelly will make a specialty of tanks, heaters, boilers, radiators and brass goods.

Saskatoon plumbers are asking for an eight-hour day with a wage of 62½ cents. Master plumbers offer a compromise proposition of nine hours and a wage of 55½ cents an hour. The men are now working ten hours a day for 50 cents an hour. This agreement holds until June 1.

H. E. Fraser, who for some time past has been in the employ of McKiggan & Davidson, Woodstock, has severed his connection with them and has started in the heating and plumbing business for himself at 509 Dundas St., that city.

H. Anderson, tinsmith and plumber, is disposing of his business and property at Winnipeg to an eastern man, and is leaving for the district south of Moose Jaw where he and his sons have homesteaded and pre-empted a section of land.

The London school board have recommended the employment of a plumbing overseer in the schools of that city. The plumbing bills for three years past have totalled $2,300, and the board think money can be saved by employing a plumber permanently.

The Pressed Radiator Co., Pittsburg, Pa., has decided to enter the heating boiler field. It has prepared a line of steam and hot-water boilers of both the vertical, sectional and round type, and also laundry heaters and tank heaters, all of which will be known as Presto boilers and heaters.

Harper & Townley have succeeded Morrison Bros., Vancouver. Before retiring from the city's employ, in which they were plumbing inspector and assistant plumbing inspector respectively, they were each presented with a handsome signet ring by members of the office staff. They have been succeeded by Messrs. Morgan and Zimmer.

Galt plumbers and builders were scored at a recent meeting of the water commissioners, the plumbers for not making reports, and not instaling shut-offs on water closets, and the opinion was expressed that they should be prosecuted. The plumbers will be instructed that unless they comply with the by-laws they will be refused connections with the water supply.

Clifford M. Sparling, of Bennett & Wright, Toronto, who was married last week, was presented with a sterling silver tea service by the staff of the company, the presentation being made by E. F. Wright on behalf of Mr. Sparling's associates, all of whom were gathered together. Notwithstanding the fact that this was a complete surprise, Mr. Sparling responded in a few well chosen words.

International President J. T. Kinsella of the International Association of Steamfitters and Helpers, with headquarters in Chicago, attended the steamfitters meeting at Toronto last week. He has completed the organization of a branch in St. Thomas. His visit to Toronto resulted in an enrollment of 20 new members, bringing the enlistment up to 135. Mr. Kinsella says that in less than a year the organization will have a thousand members in Canada. An international organizer started from Chicago a few days ago for Vancouver, another is working in London, and a third is on his way to Montreal. The Toronto steamfitters' union sprang into existence while the plumbers were on strike in Toronto 2 years ago. President Smith says they have increased their membership 50 per cent. in the last 6 months.

"This is going to be the busiest year in the building line since I have been in business in Port Arthur," states J. Barnes, of the Barnes Hardware Co. "Last year our firm installed some 16 hot water heating plants in Port Arthur. So far this year I have contracts signed for 20 systems, and I am figuring on a number of others. There is not the least doubt that this will be one of the best years in the history of the company. We are making arrangements for a further increase in our staff and this summer we expect to have a large number of expert plumbers in our employ."

Negotiations have been completed whereby the Gurney Heater Co. is to move its plant from East Boston to South Framingham, Mass. The company has taken over 22 acres of the land, and the factory will probably be in operation within the next year. The main building, which will be of cement or brick construction, will be L-shaped, with a total frontage of 1,500 x 750 ft. on each of the two sides, and the estimated cost is $250,000. The company manufactures hot-water heaters, steam boilers, radiators and ranges. At its East Boston plant the company employs

400 men, and it is very probable that more will be employed in South Framingham. The Gurney Heater Co., is a branch of the Gurney Foundry Co., Toronto, the Boston business having been an outgrowth of the Halifax agency of the Toronto Co. about 30 years ago.

The Vancouver Engineering Works was the successful tenderer for 80 tons of special castings at 3 cents per pound for the waterworks department of the city. Other bids were: Ross & Howard, 3½ and 4 cents; Columbia Foundry Company, 3¼ cents; Letson & Blakely, from 3¾ to 4½ cents. The Terminal City Ironworks will supply 25 Ludlow hydrants at $82 each. Robertson & Godson bid $82.50, and Crane Co. $84.50. Robertson & Godson and the Crane Co. were equal on the bids for the supply of twenty long tons of pig iron, the figure being $3.60, but the former firm got the contract because it could guarantee immediate delivery. No award was made in the matter of valves, on which the superintendent of waterworks will report. The bids were: A. J. Forsyth & Co., 54 in., $6.50; 56 in., $11.50; 58 in., $15.80. Robertson & Godson, 54 in., $6.15; 56 in., $8.95; 58 in., $16.23. Crane Co., 54 in., $6.42; 56 in., $9.67; 58 in., $17.54.

In 28 out of 31 Vancouver establishments where union sheet metal workers are employed, notices have been posted that open shop will be the rule. This will mean that unless an agreement is reached very shortly, 80 men will be out of work. The men have declared their intention of standing for the recognition of the union, which is the point of dispute. In three establishments, the union is recognized, while in 13 others only the owners work, so these do not figure to any extent. This is the forerunner of labor troubles that will culminate May Day, and there is considerable speculation as to their seriousness. On May Day it is the intention of the Building Trades Council to enforce the card system, but many of the trades are not well organized, and just what the result will be is hard to prophesy. It is rather odd that the unions best organized voted against the enforcement of the card system, but in a vote of the whole a majority prevailed. The plumbers, for instance, were decidely against the card system, but on May Day, according to present arrangements they will have to walk out if non-union men are on a building. In the meantime, contractors are being interviewed and many of them have consented to employ only union labor. By May 1, this list may be long enough to prevent any serious trouble.

NEW WINNIPEG REGULATIONS.

According to the new plumbing by-law that comes into effect May 1, in Winnipeg, newly devised traps and waste pipes will have to be installed by local plumbers. Those handling plumbing lines are permitted to sell such goods as they have on hand after May 1, providing merchants have had orders for same before that date. Local merchants are anxious that manufacturers should become familiar with the by-law at the earliest possible date so as to save further inconvenience. The city will forward copies on application.

TRAVELERS AT CHURCH.

In the accompanying picture friends of Ernie Laidlaw, of the Standard Sanitary Co., Toronto, Lockhart McKellar and Jack Wilson, of the King Radiator Company, Toronto, will recognize these three graces in a new role, standing outside a church entrance, they being led to commit this offence at Hamilton one Sunday not long ago, when "Ernie" met his best Hamilton girl and took the other boys along as his bodyguard. "Ernie's"

At a Hamilton Sunday School.

smile betokens that either the girl or the church made him feel in good spirits, while Wilson's expression indicates that he'd rather have been somewhere else than at Sunday School.

TANK WATER HEATERS.

The Taylor-Forbes Co., Guelph, have issued a 26-page booklet, illustrating the many styles of heaters manufactured by them to heat hot water tanks in laundries, bathrooms, kitchens, barber shops, conservatories, garages, fire halls, etc. Ratings are given and the construction shown of each style, while the sketches showing how practical jobs have been installed make the booklet valuable to master plumbers who want something to show to customers. An interesting illustration is one showing a No. 160 improved giant tank heater circulating hot water through a fire tank 65 feet above the ground level and holding 30,000 gallons of water, it being installed for the Kingsbury Footwear Co., Montreal. Copies of the booklet can be had from the Taylor-Forbes Co., Guelph, or at any of their branch offices.

GURNEY'S NEW WAREHOUSE.

The Gurney Foundry Co., Toronto, will next week open their new warehouse on Adelaide street in the rear of their King street works. It is a three-story structure 180 x 106 feet, giving a floor space of about 20,000 square feet. A galvanized iron runway leads from the old factory to the new warehouse, which is intended exclusively for the housing of the cast iron goods.

It will now be possible to systemize the working of the factory by running the cast iron stoves through their process of manufacture to the left, on to the new warehouse, while the steel products will work their way in the opposite direction.

The company's plant at Toronto Junction has also been enlarged recently.

HEATING OUTFITS FOR SCOTLAND.

A market for improved American hot-water pipes and heating appliances in Scotland is likely to gradually open. At present, as in centuries past, the method of heating houses in Scotland is by open fire place, with wood or soft coal as fuel. The fireplace is economical and usually healthful, but it is not satisfactory to the winter sojourner from America, who has been accustomed to a better and an evener distribution of heat while indoors.

Should a new and better method of indoor heating be eventually accepted in Scotland for the comfort of tourists as a beginning, the result would be an increase of travel during the winter months as well as a greater market for heating appliances. At present thousands of wealthy Americans and Canadians stop in England and countries of Europe, while in the winter it is a noted exception to find a tourist in historic Scotland. If satisfactory heating of hotels and lodgings were advertised, beautiful and romantic Scottish centres, where outdoor sports can be indulged in during the winter months, would become more favorably known and widely patronized, resulting in an increase of revenue and a larger trade.

REVENGE IN SIGHT.

The druggist danced and chortled till the bottles danced on the shelves.

"What's up?" asked the soda clerk; "have you been taking something?"

"No," gurgled the dope dispenser, ecstatically. "But do you remember when your water pipes were frozen last winter?"

"Yes; but what—"

"The plumber who fixed them has just brought in a prescription to be filled."

New Buildings, Water and Sewerage Systems

Opportunities Offered by Municipalities and Private Enterprise for New Plumbing, Heating, Ventilating or Sanitary Systems—Work Being Undertaken in Every Section of the Dominion.

Municipal Undertakings.

The Estevan, Sask., $25,000 sewer by-law was carried.

The Dauphin, Man., waterworks and sewerage by-law to raise $175,000 was passed.

A by-law will be voted on at Regina on May 6, to issue $280,000 sewer debentures.

A by-law will be voted on at Galt on May 13 to raise $5,000 for waterworks purposes.

Preston town council has awarded the contract for the King St. sewer to Wirsching Bros., Galt, at $4,416.

L. H. Buck will submit to the Chilliwack, B.C., council a scheme for a drainage and sewerage system.

Haileybury ratepayers will vote on May 2 on by-laws to issue $25,000 debentures for waterworks purposes.

Amherst, N.S., ratepayers have authorized the town council to borrow $30,000 for the purpose of extending the sewerage system.

The Winnipeg board of control will call for tenders for the following sewers and water mains in Elmwood: Sewers—Martin Avenue, $4,251; Tweed Ave., $4,983; Basswood place, $2,411; Sherbourne Street and Andrews Street

The Township of Etobicoke have awarded the contract for sewers to I. M. Scott, Lambton Mills, Ont., at $4,727.93.

The by-law to issue debentures to the amount of $100,000 for extending and improving the waterworks at Hamilton has been passed by the council.

The Aylmer, Ont., Water Commissioners have purchased land for a reservoir and work will be commenced at once on a pipe line. It is estimated that this will give the town from three to five hundred thousand gallons more water a day, at an initial cost of $12,000.

The Winnipeg city engineer reports that the estimated cost of a sewer in Godfry Avenue, from Cambridge Street to the city limits, was $23,563; that of a main sewer in Ash Street, from Assiniboine river to Godfry Street, is $38,225; and a main sewer in Crescent Road, from Ash to Renfrew, will cost $49,772. The cost of the sewer in Renfrew, from Crescent Road to Godfrey, is placed at $10,263, making a total of $121,823.

Public Buildings.

The C. P. R. will erect a $20,000 station at Woodstock.

Westminster Church, Winnipeg, will start their building this year.

The G. T. P. will erect a station this summer at Lake Superior Junction.

Plans for the new hospital at Prince Rupert, Sask., have been completed.

An annex will be erected to the Montreal City Hall at a cost of $175,000.

St. James' Church, Brantford, will remove, and will erect a new larger building

The Prince of Wales Fusiliers, Montreal, will have a new armory erected for them.

The B. C. Government will erect a new hospital at New Westminster to cost $75,000.

An addition will be built at the Kingston post office, to be half the size of the present office.

The congregation of St. Stephen's Church, Toronto, will erect a new edifice to cost $60,000.

Dufferin, Man., ratepayers will on May 4 vote on a by-law to issue $2,500 school debentures.

The building of a public hospital for Carleton Place, Ont., has been publicly endorsed, estimated cost, $25,000.

A permit has been issued for a new church for the Swedish Lutheran congregation, Winnipeg, to cost $30,000.

The contract for the Grey Nun's Hospital at Regina, has been let to Peter Lyall & Sons, Winnipeg, at $100,000.

Regina ratepayers will on May 6 vote on by-laws to raise $100,000 for hospital and $26,500 for school purposes.

Out of over thirty designs submitted for Port Arthur's Carnegie library, the design of Hood & Scott, Port Arthur, was accepted.

Plans are under preparation for a church for the congregation of the First Church of Christ, Scientist, Winnipeg, to cost $75,000.

The Welland Collegiate Institute Board may submit a by-law to the ratepayers to provide funds for a new assembly hall and gymnasium.

Two new collegiate institutes will be erected at Winnipeg, one in the north and the other in the south. Each building will cost in the neighborhood of $225,000.

The contract for drawing the plans and specifications for a new public school at Dresden has been let to J. L. Wilson & Son, architects Chatham. The building will cost $20,000.

Rhodes, Curry & Co.'s tender was accepted for the construction of the new County Academy at Sydney, C.B. Their tender was $52,000. Work will be started on this new building at once. This firm also has under construction in the same city, St. Andrew's church, the contract for which was $42,000.

General Buildings.

L. Christie will erect a $10,000 block at Fort Frances, Ont.

The Bank of Commerce will erect a new structure at Quebec.

F. Scott will erect a residence at Montreal, to cost $40,000.

G. E. Cartier will erect a dwelling at Montreal, to cost $13,000.

The Royal Bank have purchased a building site at Saskatoon.

E. M. Johnson will erect a building at Victoria to cost $10,000.

T. A. Main will construct a large new block at Orillia to cost $20,000.

The Northern Automobile Co., Fort William, will erect a new garage.

Tees & Persse, wholesale brokers, will erect a warehouse at Fort William.

R. Howson & Co. will erect a business block at Revelstoke, B.C.

The Hamilton City Corporation will build a workshop to cost $8,500.

Sir Daniel McMillan will build a residence at Winnipeg, costing $48,000.

The Westholme Lumber Co., Victoria, will erect a warehouse to cost $10,000.

Harry Cockshutt will erect a new residence at Brantford, to cost $15,000.

J. A. Seabold will build a business block at Vancouver to cost $78,000.

H. O. Lee, of Mount Pleasant will erect an apartment house at Vancouver.

MacMillan & Vollans will build an $80,000 apartment house at Winnipeg.

The Bank of Montreal will erect a branch this summer at Enderby, B.C.

An annex will be built to the Brunswick hotel, Winnipeg, to cost $22,000.

Two business blocks will be erected at St. Boniface, to cost about $20,000 each.

D. B. Hanna has been granted a permit for a new $28,000 residence at Toronto.

The Bank of Toronto will erect a branch at Yonge and Charles Streets, Toronto.

Two new hotels will be erected at Regina, Mason Bros. and T. Stacey are the builders.

Tenders will be called about May 15 for a new residence for Victoria College, Toronto.

The Rogers Fruit Co. will build a distributing warehouse at Portage la Prairie, Man.

The Western Canada Flour Mills Co. will add another storey to their ware house at Brandon.

Mr. Goodman, a capitalist of London, England, will erect a large business block at Port Arthur.

The Saskatchewan Cartage & Warehouse Co., Regina, contemplate the erection of another building.

New barracks and permanent camp buildings will be erected by the Dominion Government, at Winnipeg.

Wm. A. Nichol & Co. have decided to erect in the immediate future a hotel at Forward, Sask., to cost $7,000.

The Home Investment Co., Vancouver, were granted a permit to build a five storey block to cost $75,000.

Judge Travis, Beveridge Bros. and Geo. Bryan will erect a five storey block at Calgary, to cost $25,000.

The Quebec Railway, Light, Heat & Power Co. will erect an eight storey building at Quebec, to cost, $200,000.

The following building permits have been issued recently at Quebec: S. Savard, $10,000; J. A. Bouchard, $10,000.

Recent building permits at Outremont, Que., include: Mr. Orbin, residence, $20,000; Robt. Neville, nine houses, $15,000.

Swift & Co., Stratford, have awarded the constract for the construction of their storage plant to John L. Youngs.

F. Neil Brodie, St. John, is preparing plans for a new school building at Moncton. Tenders will be called for in a few days.

McGregor & Black have been awarded the contract for the new warehouse of the International Harvester Co., at Regina.

The contract for the Canada Permanent company's new $65,000 office building at Edmonton has been awarded to Pheasey & Batson.

Plans have been prepared by P. M. Clemens for A. Johnson for an apartment block at Vancouver. Estimated expenditure, $45,000.

Permits for apartment houses were issued recently at Vancouver: Florence Wheeler, $14,500; J. H. Bartholomew, $35,000; C. Tweedale, $26,000.

K. B. Skagford Winnipeg, is planning to construct thirty residences in Norwood this summer. The houses will cost in the neighborhood of $60,000.

J. B. Tudhope, president Carriage Factories, Orillia, has asked for about 75 houses for his employes, work for which will be in the hands of local builders.

William Bruce, Winnipeg, is preparing plans for an apartment house to be erected there this spring, to cost $50,000, and also for a $50,000 residence for R. J. McKenzie.

Recent building permits at Ottawa, include: J. Forget, apartment house, $4,500; F. L. Campbell, apartment house, $10,000; J. D. Wilson, house, $3,000; F. X. Laderoute, houses, $5,000.

The following permits were issued recently at Fort William: A. Cusson, two dwellings, $7,000; G. F. Price, dwellings, $11,000; A. Wilkie, dwellings, $18,000; J. King, two terraces, $7,500.

Recent building permits at Outremont, Que., include: L. A. Lapierre, residence, $8,000; A. C. Miller, cottage, $4,500; G. Fellows, three cottages, $15,000; Geo. Goodbody, six houses, $33,000.

The following buildings will be erected at Swan River, Man.: Canadian Northern Ry., a hotel; P. McKay, departmental store; B. E. Rothwell, brick block. A telephone exchange will be erected this summer.

Recent permits issued at Toronto include: Lourdes R. C. church, 2-storey brick presbytery, $10,000; C. D. Smith, 2 dwellings, $12,000; T. J. Bowen, three dwellings, $12,000; B. H. Fraser, 10 dwellings, $13,000; T. W. Murray, 3 dwellings, $12,000; G. L. Thompson, 3 dwellings, $10,000.

The following building permits were issued recently at Vancouver: Vancouver Ice Co., warehouse, $65,000; Vancouver Breweries, office, $10,000; B. C. Telephone Co., addition, $20,000; H. D. Crawford, store and office, $13,000, and W Leek & Son, addition, $12,000.

BUILDING OUTLOOK BRIGHT.

Statistics compiled for the first three months of the year show an increase of 65 per cent. for Canadian building over the first quarter of 1909. Almost every city and town in the Dominion reports an increase. In fact, the only centres showing decreases are Fort William, Halifax and Windsor.

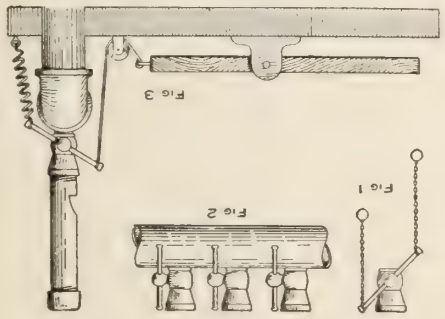
The western cities, especially, are showing building activity. Regina is pushing forward its claims as a commercial centre. Moose Jaw, too, is showing a remarkable advance, while at Saskatoon and Strathcona governmental and educational establishments are going up. Brandon, Winnipeg, Vancouver, Victoria, Lethbridge and other western cities show splendid increases.

But all the advances are not confined to the west. St. John and Sydney more than offset the decrease at Halifax, and Quebec, Sherbrooke and Montreal have taken out permits averaging nearly 50 per cent. above those of 1909.

In Ontario, Ottawa, Hamilton, London, Stratford, Lindsay, Kingston, Peterboro, Port Arthur and Collingwood show even greater increases than the Quebec cities, while Toronto also shows a gain over last year's record totals. The permits granted in Toronto to May 1 total over $4,000,000.

MAKING A STEAM CALLIOPE.

Popular Mechanics suggests the following method of making a steam calliope such as is a feature of most circus parades. A handy plumber could easily



Details of Calliope Construction.

make one and it would be a novel feature in an exhibit in a street or industrial parade.

Secure ten gas jet valves, the part of the fixture shown in Fig. 1, and prepare to place them in a piece of 1-in. pipe, 12 in. long. This is done by drilling and tapping 10 holes, each 1 in. apart, in a straight line along the pipe. The valves screwed into these holes appear as shown in Fig. 2. The whistles are made from pipe of a diameter that will fit the valves. No dimensions can be given for the exact lengths of these pipes as they must be tried out to get the tone. Cut ten pieces of this pipe, each one of a different length, similar to the pipes on a pipe organ. Cut a thread on both ends, put a cap on the end entended for the top, and fit a plug in the other end. The plug must have a small portion of its side filed out, and a notch cut in the side of the pipe with its horizontal edge level with the top of the plug. This part of each whistle is made similar to making a bark whistle on a green stick of willow. The pipes are then screwed into the valve.

The whistles may be toned by trying out and cutting off pieces of the pipe, or by filling the top end with a little melted lead. The 1-in. pipe must have a cap screwed on one end and the other attached to a steam pipe. The steam may be supplied by using an old range boiler, placed horizontally in a fireplace made of brick or sheet iron. If such a boiler is used, a small safety valve should be attached. The keys and valve operation are shown in Fig. 3. This is so plainly issustrated that it needs no explanation.

VENTILATION MEANS BETTER HEALTH.

The lives of the great majority of business men would be prolonged by the proper ventilation of their homes and their offices. In winter many go from our unventilated steam or water heated homes to unventilated offices in overcrowded, unventilated street cars, and in the evening frequently attend poorly ventilated theatres to retire at night to an insufficiently ventilated sleeping chamber, thus breathing air below the proper standard of purity for at least 23 hours out of the 24. How many of the pasty faces and nervous systems on the verge of collapse among business men are due to a lack of that first necessity of every breathing creature, pure air?

If it is desirable to furnish every pupil in the public schools with 1,800 cu. ft. of fresh air per hour, should not at least those who can afford it provide for maintaining an equal standard of purity of the air in their homes? Unlike many other improvements in the physical appliances or material mechanism of civilization the ventilation of residences by a complete and effective gravity system in connection with a correct and properly installed warm air furnace system of heating does not cost any more than does heating alone without ventilation by the unsanitary direct radiation system.

PROVIDING ARTIFICIAL RAIN.

Many of the vegetable growers of southern Florida have solved the dry-weather problem by piping their fields in such manner that sprinklers on 6-ft. standards provide a veritable rain shower as often as the pumps are started. The main feed pipe runs along the edge of the field, and, at distances of about 20 or 30 feet apart, laterals are run across to the other side. The sprinkler standards are about 30 feet apart, and rise from every part of the field, so that, when all are in operation, the water falls over the entire surface like rain. The pump, housed in a small building on the property, is usually driven by a gasolene engine.

PLUMBING AND HEATING MARKETS

MONTREAL.

April 30.—The anticipations of the supply houses as to the spring demand have been fully realized, and excellent trade is reported on every side. Soil pipe, as only to be expected, showed the first signs of the rush, and heavy orders have been pouring in from all quarters. Lead pipe and iron pipe are now good seconds however, and the trade is moving well. Enamelware and heating lines are moving, but manufacturers and jobbers are preparing for the rush that will come a little later when the houses now going up on all sides will be ready.

No price changes are announced. The radiator and boiler manufacturers held a meeting in Montreal recently, but no price changes were made. Plumbers report work active, and the whole situation is one that bears out earlier promise.

Soil Pipe—The first to feel the spring rush, soil pipe has been moving out in heavy bulk, and most manufacturers cannot turn out the stuff fast enough. It looks as if there would be a shortage later on if the demand continues at the present rate. We quote light 60 off, and heavy, 70.

Lead Pipe.—Orders are increasing in bulk as the season opens, and supply houses are satisfied with the business doing. Heavy trade is expected later on. There is a disposition to stock up in some quarters, but the greater part of the trade is for immediate usage. The market is unchanged, and we quote pipe and waste at 25 off; traps and bends, 50; calking lead, 5c per lb.

Solder.—Solder is selling well, although there is no rush on. Business will be stimulated later. Prices are unchanged, and we quote half and half 20c; wiping, 18½c.

Iron Pipe.—The market is unchanged, although not quite so firm as it was in sympathy with the situation in the States. Orders are increasing in strength, and we quote: ¼-in., black, 63; galvanized, 48; ⅜-in. black, 59; galvanized, 41; ½-in. black, 69; galvanized, 59; ⅝ to 4-in. black, 71½; galvanized, 61½.

Radiators and Boilers.—Although good trade is being done, the rush is not yet on. Manufacturers are not sorry at this as it gives them time to work up some stocks. The market is unchanged and we quote: steam boilers, 60 and 5; hot water boilers, 50 and 10; wall and hot water radiators, 50 and 7½; steam radiators, 50 and 7½ per cent.

Scrap Market.—The market has experienced no decided change since last issue. Prices are unaltered and we quote: Heavy copper wire, 11½c; light copper bottoms, 10c; heavy red brass, 10c; heavy yellow brass, 8c; light brass, 6¼c; tea lead, 2½c; heavy lead, 2¾c; scrap zinc, 3c; cast iron, $16.

Metals.—Copper has weakened and is now quoted at 14c. The other lines are unchanged, with the tone althogether not quite so strong as it was. We quote: Tin, 35c; copper, 14c; imported lead, $3.75; domestic lead, $3.60.

TORONTO.

April 29—Conditions in the plumbing trade have settled down to good steady business. Great quantities of soil pipe are going out, and makers of iron pipe state that various municipalities in all sections of the Dominion are calling for pipe suitable for gas and water mains and house services.

Enamelware is brisk in movement now and there is an absence of the spasmodic trading noted in March.

Prices are unchanged from last issue, but generally show more firmness.

Soil Pipe—Perhaps the best line moving at present is soil pipe. Outside points are buying heavily for roughing-in work on new structures. Stocks are heavier to draw upon than any former spring of recent years, as the present big demand was anticipated. Light pipe is 60 and 10; medium and heavy, 70 and 10; and 7 and 8-inch pipe, 50 per cent. Fittings are 70 and 10 per cent.

Enamelware — All kinds of enamelware goods are going forward steadily and well. Shipments are fairly heavy. Baths and closet combinations have the preference, but sinks and laundry tubs are moving well. Prices hold strong on the market at unchanged quotations. The goods are going into jobs and are not being stocked up outside.

Iron Pipe and Fittings — Immense quantities of iron pipe and fittings have been going to outside points all during April. Municipalities instaling waterworks and gas systems have been ordering freely the larger sizes of pipe, as well as smaller sizes for house services. Plumbers, too, have been buying small pipe very well. The market is steady at the quotations prevailing since the commencement of the year. Malleable fittings discounts range from 37½ to 40 per cent., and cast iron fittings from 60 to 65 per cent. Standard bushings are 70 and malleable 65 per cent. Nipples are 75 and 10; headers, 60; and flanged and malleable-lipped unions, 65 per cent. Galvanized pipe (1-inch) is $6.35 per hundred feet, and black pipe (same size), is $4.70.

Lead Pipe—Calking lead at 4¾c is considered to be too low, but one quotation gives 4½c. The movement of lead pipe just now is good. Pipe and waste are 25 per cent off, and traps and bends are at 50 per cent. discount.

Solder — Half-and-half solder prices are decidedly firm, though the same ranges of prices are given as at last issue. Quotations run from 18½c to 20c a pound, with most houses asking the higher figure. Wiping solder is at 17c to 18½c.

Brass Goods—Splendid business is being done in brass work, though gas and electric fixtures are not so brisk. Fuller work is 70 per cent. Compression work, high grade, is 60; medium, 65; and standard, 70 per cent. These figures are the same as have prevailed during the past two months.

Boilers and Radiators — Engineers state they are getting near the "rush" season, and stocks as they are turned out are being taken up immediately to fill orders. Demand is splendid just now. Quotations are unchanged. Hot water boilers and radiators are 50 and 10, and steam radiators are 50, 10 and 2½ per cent.

Metals—Tin is 35c; copper, 14c; lead, $3.85 (imp.) and $3.75 (dom.). Old Metals: Lead, 2½c; zinc, 4c; copper, 9c; iron, 10c a hundred.

PLUMBER IN ANCIENT TIMES.

An English Exchange has unearthed some quaint facts about the clothing which the lead-worker was accustomed to wear a few hundred years ago. The rig-out seems to have consisted of knee-breeches, hose, low shoes with broad toes, and a tight-fitting doublet which had a short skirt to about half way down the thighs. As late as the middle of last century some plumbers wore corduroy trousers measuring 22 in. round the bottom and 20 in. at the knee, with a full fall front. The waistcoat had a wide cord corduroy front, a fustian back, and long sleeves, and it really formed a working jacket. One of these worthies magnified his office to the extent of wearing on the way to his work and back a silk hat cut down to about 4½ in. The great drawback of the wide trousers was that when the wearers were at work on high ladders during windy weather it was necessary to tie the trouser-legs round the ankles to prevent them becoming inflated and causing chilliness to the lower limbs.

Condensed or "Want" Ads.

BOOKS FOR PLUMBERS.

PRACTICAL HINTS ON JOINT WIPING, for beginners in plumbing.—This book contains two original articles on joint wiping by experts, together with a selection of letters and articles on various important phases of the subject. 66 pages, 41 illustrations. Price 25c.

MACLEAN PUBLISHING CO., Technical Book Dept., 10 Front Street East, Toronto.

FOR SALE.

FOR SALE—Latest model, brand new Berkshire moulding machine. Never been used or out of crate. Selling account of place too small where anticipated putting it in. Flasks, etc., to go with it. Address Box 965 PLUMBER AND STEAMFITTER, Toronto, Can. (10)

SITUATION VACANT.

WANTED—First-class furnace salesman for city trade. Good position for right man. Apply The Gurney Foundry Co., Ltd., 500 King St. West, Toronto. (9)

MISCELLANEOUS.

ADDING TYPEWRITERS write, add or subtract in one operation. Elliott Fisher, Limited, Room 314, Stair Building, Toronto.

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WHAT EVERY PLUMBER WANTS. A perfectly reliable fountain pen is to be found in the Beaumel "Rival" Pen. Easy to fill, non-leakable, and writes with exceptional smoothness. Go'd nibs of thicknesses to suit every style of handwriting. Guaranteed in every respect. Sold by all stationers. A. R. MacDougall & Co., Canadian Agents, Toronto.

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Write for our free booklet.

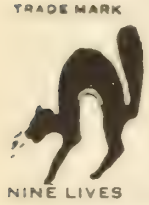
THE CANADIAN PRESS CLIPPING BUREAU

232 McGill Street, MONTREAL — 10 Front St. East, TORONTO.

DIRECTORY OF MANUFACTURERS

Plumber and Steamfitter receives, from time to time, enquiries for the names of manufacturers of various lines. These enquiries come from firms who usually intimate they have looked through Plumber and Stamfitter but cannot find any firm advertising the line in question. In many cases these firms are anxious to secure the information at once. This page enables manufacturers to keep constantly before the trade lines which it would not pay to advertise in larger space.

ELECTRIC DRY BATTERIES.



X CELLS are the only Dry Cells which show NINE LIVES.

You'll make money in handling them. All standard sizes.

Electrical Specialties, Limited
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Corundum and Emery Wheels
Grinding Machines, Beaver Oil Stones.

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Anti-Splash Tap Filters
The "Galvo" Filter and Water Steriliser
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There's good money in them for hardware dealers.
Write for Prices.
The Anti-Splash Filter Co.
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The Manufacturers Sales Co.
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We are open at any time to receive propositions from first-class manufacturers who wish to be represented in [illegible]

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WESTERN DISTRIBUTORS
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OUR POSITION IS YOUR OPPORTUNITY
SASKATOON, WESTERN CANADA

METAL PRODUCTS.

Established 1880
NEITHER FICTITIOUS NOR EXORBITANT
ORDER AND USE
LANGWELL'S BABBITT
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SHELF BRACKETS.

Will Hold Up a Shelf

That's what a shelf bracket's for. For this purpose there can be NOTHING BETTER, NOTHING CHEAPER than the BRADLEY STEEL BRACKET. It is well Japanned, Strong and Light. The saving on freight is a good profit aside from the lower price at which the goods are sold. Order direct or through your jobbers.

ATLAS MFG. CO., NEW HAVEN

BRONZE POWDERS

BRONZE LIQUIDS

The Canadian Bronze Powder Works
Montreal Toronto
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Send us your orders and we guarantee the quality

"Always Reliable"
Gasoline Combination Blow Torches
(Patent Applied for)
furnished with our adjustable soldering iron holders which can easily be removed when not required, and has and advantage over old style stationary kind which are often in the way. Also has our "never leak" pump, plunger of which screws down. Made in two sizes, pints and quarts, with or without the soldering iron holded either round or flat shaped tanks. Can be obtained from any jobbing house in Canada.
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Ventilators and himney Cowls
My patent rotary ventilator is **backed by a guarantee.** It is the best ventilator on the market. Write for particulars, handsome booklets of testimonials and information mailed **free.**
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GENUINE
Armstrong Stocks and Dies
ARE THE BEST.

Catalogue on request.

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No. 25A BEAVER DIE STOCK

Equipped With Universal Chuck

No. 6, threading ¼, ⅜, ½, ¾ in., complete

Number 25A "Beaver" cuts 1-in., 1¼-in., 1½-in., 2-in. pipe. One boy can successfully operate this tool.

It is our old No. 2 greatly improved, threading from 1 to 2-inch pipe without changing dies. It has a new centering device for fastening the stock to the four sizes of pipe. Does away with all bushings. The rear opening is large enough to take in a 2-inch coupling for threading short nipples. The parts subject to wear are detachable and may be replaced at slight cost.

ALL TOOLS GUARANTEED

To prove our claim that "Beaver" Die Stocks are the *cheapest*, *most accurate* and *fastest Pipe-Threading Tools* on the market, we will send one on 30 days' free trial. If it does not give you better, quicker service than any Die Stock you ever saw before—send it back at our expense. This is a genuine offer—it costs you nothing to investigate.

Borden - Canadian Company, 66 Richmond Street East Toronto, Ont.

Take Your Stand

on the side of efficiency and reasonable cost by recommending and installing the

SOVEREIGN MONARCH RADIATOR

No modern radiator has so many points in its favor. Here are a few of them:—It will save labor, lessen cost of household repairs, and minimize insurance premiums. It will increase the value of the property in which it is installed from 10 to 15%, and will minimize housecleaning by doing away with all dust and ashes. Send for booklet and full particulars. The arguments in favor of handling the "Sovereign Monarch" cannot fail to convince you.

Taylor-Forbes Co., Limited, Head Office and Works: **Guelph, Ont.**

TORONTO—1088 King St. West. MONTREAL—122 Craig St. West. WINNIPEG—The Vulcan Iron Works, Ltd.
ST. JOHN, N.B.—H. G. Rodgers 53½ Dock St. QUEBEC, QUE.—The Mechanics Supply Company.
VANCOUVER, B.C.—Taylor-Forbes Co., Ltd., 340 Pender St. CALGARY—The Barnes Co., Limited.

Plate F
199

The Standard Ideal Company Ltd.

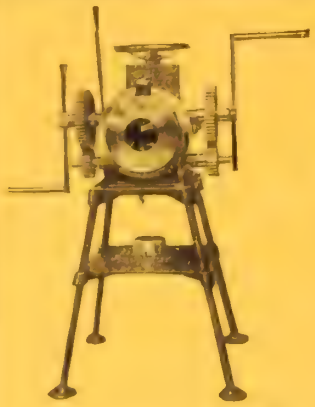
Dimensions Lavatory 18 x 21' Oval Bowl 11" x 14" Back 8"

We have a large number of other styles including many new designs to select from--For which see our catalogue F now ready for distribution.

We are also manufacturers of full lines of Bath Tubs, Shower Baths, Lavatories, Sinks, Laundry Trays, Wash Sinks, Range Closets, and Urinals, etc., etc.

Head Office and Factories, Port Hope, Ontario

Branch Offices and Sample Rooms:
Toronto, 50 Colborne Street; Montreal, 128 West Craig St.: Winnipeg, 154 Lombard St.



Loew Victor Pipe Machine

completely covers the needs of the plumbing and heating contractor in pipe threading.

Its usefulness in this field is of the widest, and the returns from the money invested will soon exceed the original amount.

Let us tell you just what the Loew Victor will do for you

Write.....

The Loew Manufacturing Co.
CLEVELAND, OHIO

Agents for Ontario and Western Canada, The General Supply Co., Ltd., 219 Bank St., Ottawa, Ont.

IT WILL PAY YOU TO INVESTIGATE AND USE

DART UNIONS

LESS COST IN CONSTRUCTION

MORE PROFIT

BETTER SATISFIED CUSTOMERS

DART UNION CO., Ltd.
TORONTO

PLUMBER & STEAMFITTER

and Sanitary Engineer of Canada

THE MACLEAN PUBLISHING COMPANY, LIMITED, PUBLISHERS

MONTREAL 701-702 Eastern Townships Bank Bldg. TORONTO, 10 Front St. E. WINNIPEG, 511 Union Bank Bldg.
LONDON, ENG., 88 Fleet St. E.C. NEW YORK, Rooms 1109-1111, 160 Broadway

Vol. IV, No. 5 (New Series). Publication Office : TORONTO, MAY 16, 1910. Old Series, Vol. XXII. No. 10

Architects, Builders or Jobbers?

Which one of these three classes has the most influence in selecting the make of boilers, radiators, soil pipe, brass goods, enamelled ware and other goods installed by plumbers and fitters in any new houses which are being built?

A prominent steamfitter in Canada stated recently that two years ago he had handled one make of boilers and installed them during 1908, to the exclusion of all other lines. He had some trouble with this manufacturer and in 1909 decided to recommend another make of boilers, with the result that during the whole season of 1909 only two boilers of the kind he had handled exclusively the preceding year were installed by him.

With two exceptions he had switched every order.

This proves conclusively that the plumber and steamfitter has sufficient influence in the majority of cases to instal whatever make of goods he thinks best. This is as it should be, for when a plumber or fitter undertakes a heating job, or any other work, he takes the responsibility for it giving satisfaction, and builders and owners will usually, therefore, give him a good deal of latitude in the selection of the various brands.

The most economical method for manufacturers and jobbers to reach the plumbing and steamfitting trade throughout Canada and acquaint them with the merits of their goods and the facilities they have for supplying their wants promptly is through the advertising columns of PLUMBER AND STEAMFITTER.

For full information regarding rates write.

Plumber and Steamfitter

and Sanitary Engineer

MONTREAL TORONTO WINNIPEG

Beaver Brand

Cast Iron Enamel Ware

Famed for its Smoothness, Colour and Wear

This Cut Illustrates Our

Beaver Brand Roll Rim Sink

This is one of our leading and best known lines, which has given satisfaction throughout the Dominion. Our new and up-to-date plant is unrivalled for the production of Bath Tubs, Slop Sinks, Kitchen Sinks, Laundry Tubs, Lavatories, Closets, etc. Customers can rely on having their orders promptly filled. Every article of "BEAVER BRAND" manufacture is guaranteed.

Amherst Foundry Co., Ltd., Amherst, N.S.

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A. J. JACKSON, 178-180 Victoria Street, TORONTO

MARITIME PROVINCES	MONTREAL, P.Q.	VANCOUVER, B.C.	SEATTLE, WASH.
All Jobbing Houses	All Jobbing Houses	A. O. Campbell	Crane & Co.

No trouble to you, your apprentice can instal it—
Satisfactory Profits——
Enhanced Reputation——

Peerless WATER SERVICE SYSTEMS

Peerless Water Service Systems are rapidly displacing every other kind because of their simplicity and absolute reliability. You cannot afford not to be familiar with Peerless Water Service Systems—an architect may consult you about them to-morrow.

Look into this matter now—don't delay it, write us now for Catalog and price list You will be surprised at the cheapness of Peerless Water Service Systems.

National Equipment Company, Limited
Lombard Street **Toronto, Ontario**

Quality THE CROWN **Talks!**

When you see the "Crown" Trade Mark on *laundry goods*, you will know that you are dealing with an article in which QUALITY is the pre-eminent feature. We spare no pains in the selection of materials, skill in making and care in finishing "CROWN" goods and the result is an article second to none on the market

Send for Catalogue.

H. C. BEDLINGTON & CO.
223 Adelaide Street West :: :: :: TORONTO

SUPPLY
"Kerr" Radiator Valves
on your heating work, and your valve troubles are over.

We charge the price and furnish the reliable goods

The Kerr Engine Co., Limited

Look for Our Name "KERR" on All Genuine KERR VALVES

Walkerville - Ontario

"VULCAN BIJAWS"

The climax of 30 years' manufacturing and selling experience in Chain Pipe Tools.

BECAUSE in the reversible jaws—readily changed when teeth first in use wear—you get the service of two tools at the price of one.

BECAUSE of the fastening of jaws to handle with two bolts the full strength of tool is provided for in one, and the other may be used as an emergency bolt, and repairs may be made while at work in case of accidents.

BECAUSE the bite of teeth is a distributed pressure and does not tend to crush pipe; no pipe-tearing or jaw-wearing strain on "straight-cut" teeth

BECAUSE every part of tool is fully guaranteed and interchangeable. No tools similarly made ever approached the "Vulcan" class o Chain Pipe Tools in strength or utility

Free catalogue and "V-B" rule for a postal

J. H. Williams & Co., 77 Richards St. Brooklyn, New York

A NEW VALVE

JENKINS BROS.'

GUN METAL AND IRON BODY

GATE VALVES

"TYPE K"

Special Features:

Highest Quality Steam Metal. Perfect Interchangeability. Double Compensating Bronze Wedges. Metal Gland in Stuffing-Box. Great Strength of All Parts. Carefully tested to 250-lbs. Water Pressure

UNRIVALLED IN DESIGN AND WORKMANSHIP

A Thoroughly Reliable Gate Valve for Steam, Water, Oil, Gas or Air. A trial will convince you that it will pay you to use these valves on all your work.

Stamped with TRADE MARK like cut.

Stocked by Machinery, Hardware and Supply Dealers throughout the World.

Catalogue and Full Particulars Cheerfully Furnished on Application.

JENKINS BROS., Limited

Head Office and Works:
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And at
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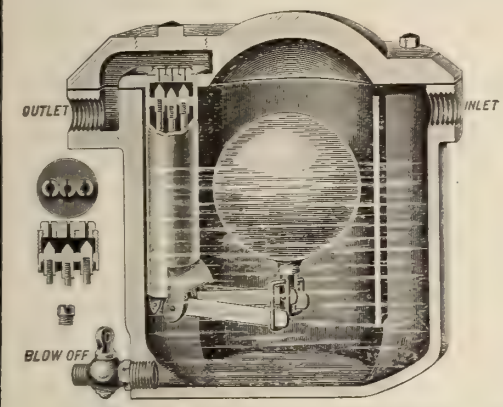
The Empire Low-Down Closet

is the most reliable closet on the market. The FITTINGS are made of the BEST materials and are GUARANTEED.

THE WOODWORK IS GUARANTEED AGAINST SPLITTING

DOWELS are used in all the joints in our TANKS and SEATS. We are the ONLY manufacturers who use or CAN use this process. Ask the jobbers who sell our closet or the plumber who uses them if they are not the BEST. Sold from coast to coast. Samples of woodwork showing this joint will be sent for the asking.

EMPIRE MANUFACTURING COMPANY, LIMITED, :: LONDON, ONT.
Canada's Largest Brass Factory



For Pressures up to 250 lbs.

WRIGHT "EMERGENCY"

High Pressure Continual Flow

STEAM TRAP

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Write for pamphlet W.

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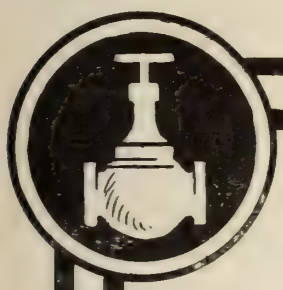
TORONTO 15 Ottawa St., MONTREAL WINNIPEG



Plumbers and Steamfitters

THROUGHOUT CANADA

will find it to their interest to buy their supplies from the oldest and one of the largest firms doing business in the Dominion.

Our stock of Baths, Lavatories, Sinks and Closets is very large at all times and your orders to be shipped either from stock or Works will receive prompt attention.

Write for our latest prices; they will interest you.

Wm. Stairs, Son & Morrow, Limited
1810 HALIFAX, N.S. 1910
Eastern Canada Supply House.

Plumber and Steamfitter

and Sanitary Engineer of Canada

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Circulating amongst Plumbers, Steam, Hot Water and Gas Fitters, Sanitary Inspectors, Heating and Ventilating Engineers, City Engineers, Boards of Health, Architects, etc.

TORONTO MAY 16, 1910

POWERS OF TRADE ASSOCIATIONS.

Seven pages of this issue of The Plumber and Steamfitter are given to a verbatim report of an address by E. F. B. Johnston, K. C., before the recent grocers' convention in Toronto. Mr. Johnston is one of the leading lawyers in Canada and none have given the subjects of "secret commissions" and "trade associations" closer study than he. Consequently his advice on what a trade association can and cannot do is particularly valuable to all business men.

It will be noted that Mr. Johnston condemns the combination of master supply men, which was broken up by the courts in Toronto three years ago. Undoubtedly things were carried too far by the old association, and the men in the trade to-day are still paying the penalty in the form of price-cutting competition. Mr. Johnston's address will bear study and in view of the proposed reorganization of the trade along educational lines the advice comes at a very opportune time.

A WRONG POLICY.

A representative of The Plumber and Steamfitter called upon one of the brightest and most straightforward master plumbers in Toronto during the past week, and in the course of conversation asked him to make an occasional contribution to the "Questions and Answers" department of the paper. The plumber, however, refused saying it had taken him years of hard labor to acquire the knowledge of the trade (which he undoubtedly has) and he did not propose to give this information out freely to others.

Because this plumber's position is typical of that taken by many other well-informed and seemingly intelligent men in the trade is our reason for commenting upon the matter.

In the first place, where did this man acquire his knowledge? From others, undoubtedly. He had the result of their experience and was aided in his studies by the advantages gained in the public schools, fought for and supported by previous generations. He owes much of his education to society and he has a debt to pay off by passing the knowledge on to others.

But let's look at the matter from the practical as well as the ethical viewpoint. The plumber referred to complains about the unprofitable condition the trade is now in. Incompetent men undertake jobs cheaply and even the best firms are forced to cut their prices (and too often the quality of their work) down to the standards set by the incompetents. As a result this plumber (who has one of the best shops in the city) has to accept work at unprofitable prices and, in addition, be looked upon with suspicion by his customers who, through lack of confidence in plumbers generally, consider each one a near robber.

Plumbers can learn lessons from bankers and doctors. If one bank fails all the other banks come to its rescue, the result being that the general public has unlimited confidence in Canadian banks. And doctors, instead of keeping secret the knowledge they gain in practice, give the result of their studies to the profession at large in order that each doctor or surgeons may be able to give the best possible service to society. If plumbers worked together like bankers and doctors the trade would be looked upon in a different light. The public would have confidence in plumbers and recognize them as professional men working in the interests of society for better sanitation. And as professional men their remuneration would be greater than as mechanic-merchants. A fair price could be demanded and secured.

Take the case of the plumber referred to. He has the nicest-appearing shop in his section, and he has a reputation for doing good work. Under ordinary circumstances his shop and his reputation would bring him a lot of business but with "price" as the chief argument he is brought down to the level of the price-cutting plumber who cannot even figure his own jobs and has to get the supply house traveler to do it for him.

The day of individualism is rapidly passing. Men in the same line of work must co-operate or go on the toboggan. Men may think themselves "self-made" and try to keep their knowledge to themselves, but they only injure themselves by doing so. These tactics have brought conservative British manufacturers to a point where sooner or later they must bow to Germans, Americans and possibly Japanese as their superiors in many respects.

If such bitter competitors as Canadian brass, stove, and radiator foundrymen can meet together, compare factory costs, giving accurate information as to how much it costs to make each particular article, surely master plumbers ought to realize that it will be equally to their advantage to organize—not to boost prices, but to educate those whose mechanical or business methods are harmful to the trade.

The plumbing trade is in about as bad a condition as it could be in Toronto, Hamilton, London, Winnipeg, and other Canadian cities, and it will not be bettered until the individualistic ideas of the leading men in the trade are replaced by a willingness to help raise the standard of the trade by increasing the knowledge of their fellow plumbers.

WELCOME A HEATING MERGER.

The big consolidation of radiator firms in the United States which leaves but three large concerns, the "American," the "United States" and the "Pressed" Radiator Companies, in the field, provides an opportunity for the establishment of better conditions in which there will be less price cutting or, if unwise counsels prevail, makes possible even more strenuous competition than has existed in the past.

Canadian heating men are interested in the situation as the developments across the line are likely to have an effect upon the trade in this country. As is well known, there have been several proposals that Canadian boiler and radiator manufacturers consolidate their interests but there has always been some stumbling block in the way.

Heating contractors would be glad to see the radiator manufacturers get together as so long as there is bitter competition amongst manufacturers and an open market in boilers and radiators, master plumbers and fitters will be only too anxious to buy at as low figures as possible and only too foolish to pass on to customers the savings made in the special prices secured from manufacturers.

Price cutting among manufacturers is the cause of much of the price cutting and consequent ill feeling, existing amongst the heating and plumbing trade.

TAKE PAINS IN YOUR WORK.

Take pains. No more valuable advice can be given to any young man, and the master plumber who instills this precept into the minds of those he is training, not only starts them firmly on the road to success, but he is tending to elevate the future status of his trade. In every shop should hang the notice "take pains." It is a short sentence, but most pregnant with meaning.

The value of taking pains follows a plumber all through life. It means not only dollars and cents, but reputation as well—a most happy combination. The lad who starts to take pains, learns his trade thoroughly. He makes a perfect wipe joint, his workmanship generally is neat, and later on when he is a master plumber his instalations show the value of his earlier training. The work of the plumber who takes pains may be slower than that of the man who dashes things off, but what is lost in time is more than made up in durability and appearance. Plumbing work is not for to-day alone, it is for to-morrow and the day after, and beating the clock does not add to the permanency of a job. The day is fast coming when the popularity of a plumber with the public will not rest on price, but on reputation, and the man who takes pains is solid from the first.

The young plumber who is painstaking may fancy that he is being left behind by his comrades who are more slap dash. He may be caller a slow coach. But he can bear that with equanimity. It gets easier to take pains as time goes on, and when those who have apparently left him far behind attempt to follow his example, as they will want to at some time or other, then the thorough one becomes fast in comparison.

The value of taking pains is not only apparent in a man's workmanship itself, but it is apparent in the management of his business. It is in this latter direction that the plumber is generally mostly at fault. As a journeyman he does no clerical work, and later on when he has to tackle the bookkeeping side of his business then he is inclined either to neglect it altogether or to get it through as quickly as possible. In the end he drifts into a slipshod way of estimating, bookkeeping, collecting and so on.

More businesses come to grief through lack of attention to the clerical side than would be thought possible on first thoughts. The estimating of overhead expenses carefully, the systematical booking of all jobs, the prompt rendering of invoices, the monthly statement and the methodical tackling of those who are inclinde to hold off with their payments are the pitfalls which beset the plumber.

Now the man who has had carefully inculcated into him the value of taking pains in his workmanship is more likely to take pains with his bookkeeping. He will attempt to be business-like. He will carefully put down every job, and not trust to his memory. He will keep his books clean and in order. In fact he will put the same pains into his ledger work as he does into his wipe joints, and doing that, the work will lose half its terrors for him.

OFFICIAL NEWS

N. A. M. P. & S. F. of CANADA

OFFICERS 1909-10

President,—Joseph Laurier, Montreal. Vice-Pres.,—G. H. Cooper, Toronto.
Treasurer,—H. Mahoney, Guelph. Secretary,—H. W. Munday, Montreal

Provincial Vice-Presidents,—Nova Scotia, Frank Powers, Lunenburg; New Brunswick, Wm. Watson, Moncton; Quebec, J. E. Walsh, Montreal; Ontario, R. J. Shannon, Toronto; Manitoba, R. L. Beattie, Winnipeg; Alberta and Saskatchewan, E. J. Young, Calgary; British Columbia, John Colbert. Victoria.

Chairmen of Committees,—Legislation, H. A. Knox, Ottawa; Sanitary, P C. Ogilvie, Montreal; Apprenticeship, J. Griffin, Montreal; Essay, E Russell, London.

Next Convention will be held at Toronto the last week in August, 1910.

CONVENTION DATES SET.

Secretary Munday of the National Association of Master Plumbers, states that the date of August 31 and Sept. 1 for the convention in Toronto, as suggested by R. J. Shannon, who is taking charge of the Toronto arrangements, is perfectly satisfactory. He will notify the various local vice-presidents on or before the 15th of July, asking them to find out the number of delegates who are likely to attend.

Secretary Munday hopes that all the vice-presidents will get after the matter energetically, and get as many delegates and members of the craft to attend the convention as is possible, as the association is always pleased to see new faces. The various officials would confer a favor upon him by letting him know as soon as possible how many will be likely to attend so that proper arrangements can be made in good time. Secretary Munday is pleased to see the progress that is being made in association work in Alberta and Saskatchewan.

U.S. NATIONAL CONVENTION.

The 28th annual convention of the National Master Plumbers' Association of the United States will be held at Chicago, June 28, 29 and 30. In connection with the convention there will be held a trade exhibition which will be the largest ever attempted in connection with the plumbing and heating trades.

What Trade Associations Can and Cannot Do.

The Rights of Manufacturers, Wholesalers and Retailers as Expounded by E. F. B. Johnston, K.C., at Convention of Ontario Wholesale Grocers' Exchange—Evolution of Business Conditions and Why Present Conditions were Brought About —Legal Combines and Those That are Illegal.

There was once in my native country a very old and very rheumatic and very testy Presbyterian minister, and one thing he objected to was draughts in the kirk. One cold, raw day, by some unaccountable means, the officials had left the four doors of the church open. He spoke for half an hour or longer upon the elementary principles and the cardinal points of his discourse, and he suddenly discovered the draught was too much for him. Leaving the academic, he at once imported into his sermon more vigor than usual. Thumping the pulpit, and turning in wrath to the congregation, he said: "Elders and deacons, shut the north door, and see that ye shut the east door; dinna forget to shut the south door and the west door." And, dropping his voice, he went on with his discourse. Two old gossips were coming out when the service was over. One of them said to the other: "Maggie, how did ye like the minister to-day?" "Well," she said, "I didna quite follow him through his cardinal points and his elementary principles, but, my, he was grand on the subject of shutting the doors!"

If I am grand on that subject, if I can help you in any way to shut the doors against the enemy I shall feel that what labor I have spent in regard to what I have done will not have been spent in vain. I do not think I can say much to you on the subject of how to make larger profits—a subject I would like to talk to you about, and give you some information upon if I were qualified. But, you see, my position is the converse of yours; I am for small profits. I am for cheap food: I am, from the personal standpoint, for cutting prices, so as to get my goods cheap; and looking at it from that standpoint I have endeavored to see, being a consumer—not a very large one, it is true—I have looked to see how it would affect the general community and the prosperity of the trade and commerce of this country if I, a consumer, had my way. Therefore, we have to look at it from both sides.

Specific Reasons Desirable

If, however, you give the consumer the absolute control of the trade and business of this country, you are out of existence. If you give the wholesale dealer, or the manufacturer, the absolute control of the business of this country, and it happens to fall into the hands of men who are not, perhaps, over-scrupulous—occasionally we do get these men—then you destroy the rights of the consumer; and therefore what I have endeavored to see for myself, without knowing the price of sugar, or the price of tea (the only thing I know the price of is tobacco), without knowing any of these things I do not want to say, as did the old magistrate who was accused of partiality in the disposal of a case. He said: "I resent the imputation, and I deny all allegations of improper conduct. I have been on the Bench for thirty years, and throughout the whole of that time I have invariably taken the middle course between right and wrong!"

Now let me say a few words of a general character. A few ideas will lead up to what I am going to say finally in regard to the matters that I have to deal with to-day. In this rapid age, we all think too generally. We draw too many general conclusions. The man who can sit down and work out concrete principles, who can give the specific reasons for the specific act, is the man whose opinion is worth more than the man who casts the whole thing aside upon a general assumption, and says it is good for this or bad for that. The general principles of all business are manifest to the minds of those who are engaged in them, excepting in my own profession. There you never know where you are at, because judges will say one day that the principle is so and so, and that is reversed next week by another set of judges. I think it would be wise to rather crystallize some ideas that I have upon the subject, and I assume that my invitation to address as large a jury as this is, is due to the fact that myself and my friends, Mr. Armour and Mr. Ambrose, were able to do some service in the interests of a depressed trade, in the interests, I may say of, to some extent, a persecuted trade during the last ten or fifteen years.

In order to understand the exact position of matters, and in order to see just exactly where we are at in dealing with a subject of this kind, it is as well to ascertain what combines mean, what the Secret Commissions Act was intended to prevent, what indeed the criminal law of this country prevents, as I shall show you later on, I hope to your satisfaction. In dealing with that we have to see for a moment (I shall not detain you upon that point) what the origin of just such an organization as is represented here to-day meant.

These bodies were called "guilds," an honest old name, but one which in the minds of some people who did not understand the position, savored somewhat of a combine. But it is exactly what you and every other trade and business and profession are striving for to-day, and what you must strive for if you desire to retain your individuality and your concrete existence. It was founded upon common brotherhood, upon loyalty to each other, it was founded upon a system of faith and confidence that perhaps the world has never seen or experienced in these later days of trading and barter and exchange; and more than that, it was based upon the highest principles of morality and religion.

Early History of Guilds.

The very first guild that was organized was as far back as the days of King Canute, and that was purely a religious and moral guild. It was for the support and maintenance and assistance of all the infirm members, it was a looking after of those who were unable to look after themselves; it went so far as to provide for the burial of the dead. The first business guild was at Cambridge in England, a guild that to some extent dealt with trade relations. And just let me tell you from an eminent author what the principle underlying that guild was, and let us apply it to the present day concerns:

"If one misdo, let all bear it. Let all share the same lot." That was the motto on the flag of that guild. It was a banding together not for the purpose of injuring a human being, a banding together of men engaged in the same class of business for their self-protection, for the self-existence of their own trade or calling and for the protection of each other. That implied a very high moral rectitude; that implied the greatest amount of loyalty you would expect one human being to exhibit towards another; that implied absolute confidence in each other.

The old German guilds were based upon somewhat of a similar foundation. They were national to some extent, at the same time they were bodies that did deal incidentally with some matters of trade, but it is when we come to the London guilds that we find the ends of the trade and business of the country being taken care of. These guilds were originally formed for the maintenance of peace, for the protection of property, the suppression of violence and matters of that kind, and I am citing now from a well-known author upon the subject. As trade began to change, with various interests cropping up, so did the guilds assume greater control over trade relations until they became actually the municipal government of such towns as Berwick-upon-Tweed, taking charge of the municipal administration, controlling the markets and the police—taking practically the position—well, not quite the position of the Board of Control in the City of Toronto, because they did better than that—they managed things so well that they continued to flourish

for hundreds of years along exactly the same lines until they became what were called the Crafts Unions—where you had the capital on the one side in the guilds as they originally started, and the craftsmen on the other side looking after the details and doing the work which led to the establishment of the modern day trades unions.

I am not going to take up any further time upon that, excepting to read an extract to show the high character of the guilds in those days. The same foundation ought to underlie any body of men who seek to assume for themselves the rights and privileges which you have a right to assume and seek in protection of your trade.

"The guild stood like a loving mother providing and assisting at the side of her sons in every circumstance of life, and cared for her children even after death; and the ordinances as to this last act breathe the same spirt of equality among her sons on which all her regulations were founded and which constituted her strength."

Having given you an outline of that, let us see what the conditions of trade are to-day, and how it is necessary that something — modernized, it is true — something along these lines must take place to-day; not to hurt your fellow man, nor to prevent your fellow tradesman from getting on in the world, not to prevent his buying and selling goods as freely as he can breathe the air of Heaven, but to so regulate and control trade and commerce and business along these lines that instead of being what some of you gentlemen were charged with being—violators of the law—you ought to have been credited with being protectors and defenders of honest law and honest administration.

Evolution of Changed Conditions.

Look at it for a moment. We cannot trade individually; that, of course, is out of the question. We have reached an artificial stage in the history of business, not only in this country but in all civilized countries, where the individual trader is out of the question. You start first with the mere exchange of one product for another. You have no division of classes, no division of responsibility; it is simply one man with the other. By and by, as our wants increase—and they are increasing very rapidly all the time—and as the supply becomes larger, you create a totally different condition of things, a complex position. Let me illustrate. I can recollect things that happened over forty years ago, and I can recollect what was the condition of the country longer than that. And what was it? In the original days of Canada the settlement was small, and confined to a very narrow area. I can remember the time when the shoemaker came round and made the boots for the family. He was the producer, the manufacturer. I can remember the time when the woman used to come round and make the dresses for the womenfolk of the family. I can also remember the days when it was no uncommon thing for the bagman to come round with his wares, to be followed, as the area increased, by the peddler.

Then you have the origin of the departmental store; the four corners—namely, the blacksmith's shop, the tavern, the general store and the other complement. That was caused by what? The general store was brought about not because the man wanted to take the whole business of the neighborhood, but by necessity, the demands of the people. Then you go on until the merchant came in with his specific line, the grocer, the dry-goods man as the case might be. Thus has the country expanded, and we have to consider not only the expansion, but let us look at it from the closer standpoint. It was not the expansion of the country so much as it was that the demands, the wants, and the tastes of the people were becoming more varied and had to be supplied in some way or another. They could not be supplied by the general store or the man peddling his goods about the country.

Thus you create a different state of affairs. There was thus created a purely artificial condition. In all business, we have an artificial condition; we have an artificial condition at Ottawa. What have we got? We have got the revenue, the system of protection, and various other policies—but take protective principles, free trade principles, anything you like; they may be perfectly good under certain conditions, but when you come to a certain complex, artificial condition in the affairs of any country, to say nothing of the individual community, you have to devise something to meet the requirements of that condition, and that is how you get the wholesaler. Why? Because we have, as I said, a sparsely settled country. You had to reach the consumer through certain media. What was the best? It was not that the wholesaler arrogated to himself the right to charge what he pleased. He did not desire to cut in on the privileges of the re-

GETTING AROUND THE SECRET COMMISSIONS ACT.

Incompetent salesmen have unique methods of dodging the law. The above represents a traveler who cannot secure an order at regular prices. He bets the retailer that it is not 11 o'clock when he knows it is nearly one. The surprised retailer takes him up and wins what is virtually a rebate—and the traveler gets the order. This is known by Plumber and Steamfitter to have occurred recently in a Canadian town.

tailer. He was the product of his times, and he came through a system of evolution; just as you find in the common life of the country to-day that the man who had his oxen and took his grist to the mill, to-day has his carriages and perhaps an automobile.

The man who had his home-made shoes fifty or sixty years ago, to-day has the finest patent leather the manufacturer can produce. Conditions have changed and in that change has grown up the body of men I see before me. In other words, your body is the result of evolution. It is not the creation of any corporation or any body of men to interfere with trade or commerce at all. The condition of trade has brought you into existence, and if conditions were changed, you would be without a calling.

Getting to the Consumer.

Now you will bear in mind, as I said before—and let us get down to the concrete principles—you always had the producer, whether it was the home-made shoemaker, or the man who made the axe handle does not make any difference. You always had the producer. To reach the consumer in the early days was a very simple matter, but when you come to the condition of things you have in Canada to-day, and have had for the last forty years, the reaching of the consumer becomes a very complicated problem. You cannot compare London, or any of the big English cities, with Canada, because within an area of a few miles they have more consumers than we have in the whole Dominion of Canada. You had to reach the consumer in some way. You did it originally through the retailer. Then came the necessity for the wholesaler. Here is where a misconception has taken place in all the prosecutions that we have had in the courts in this country; an entire misconception.

The object and the very reason why the wholesaler came into existence was not that he should make money and increase the prices or eliminate competition, but to reach the consumer in a more direct and cheaper way than ever had been done before. He was created by the condition of things as they developed and as the process of evolution went on. The result is to-day we are dealing with the three classes. We are dealing with the manufacturer, the wholesaler and the retailer, and I am not going to argue for a moment on what has been declared by the highest court in the province and some of the highest courts in England, and which appeals to our common sense, namely, that our present system has been found to be, as an absolute fact, the best and cheapest method of connecting the bank of the manufacturer with the bank on the other side of the stream, the consumer.

Right of the Manufacturer.

The manufacturer—let me say this in order that we may clear the way from a legal standpoint—the manufacturer has the absolute right to fix his price. It was argued in the cases I have referred to that by fixing his own price, and perhaps enhancing it, he was violating the Act. Not so. For instance, we have seen again and again, the result in argument by taking the case of Sir William Macdonald and his tobacco. He produces a certain article. He is the only man who knows what the cost of that article is to him; he is the only man who knows how much the cost should be to enable him to make a living profit. He fixes that price. If he fixes it too high he has got the American Tobacco Co. coming in with perhaps as good an article at a less rate. He has got other manufacturers coming in in the same way. The same with the sugar refiners and canned-goods people. You may combine, but the moment you increase the price beyond the living profit, that moment instead of destroying competition (and the economic history of this country tells it) that moment you actually increase competition, because you encourage others to go into the business. We had the evidence of Mr. Robertson, who said the fault he had to find with the guild was that it increased competition, and there was a great deal of truth in the suggestion he made.

When you come to work it out, the moment you combine, or do anything that tends to enhance the price at all materially, that moment you find thousands of others ready to come into the market and supply the demand. So there is first of all the interest of the manufacturer, to have his profit; and he alone can tell, if he is an honest man he will tell, what the living profit should be. If he fixes it too high, he is met at once by opposition, and I care not what the merger may be, what the combination may be in even such an important body as the wholesale grocers of this country—controlling as you do a very large amount of the retail trade of this country—even you cannot control a situation so as to prevent competition.

Carrying Out of Agreements.

These things must, however, be worked out in good faith. The manufacturer must depend upon the honesty of his agents. You are his agents. If he makes an agreement with you, he has the right to see that the argeement is carried out. Not only so; he has the right to so carry on his business that he may rely absolutely upon the fact that that agreement will be carried out—because according to the agreements he makes, so he cuts his cloth.

Now it is a matter of you gentlemen acting either individually or in combination. It is a matter of you handling certain products of this country. And to the extent to which you are able to make your trade relations perfectly honest in the observance of the contracts and all the rest of it, to that extent you are not only benefiting yourselves, you are not only benefiting the manufacturer, but you are reaching out towards the benefit of the consumer.

Wholesaler's Position.

The wholesaler, as I said, comes next to the manufacturer in the ordinary course of proceedings. The wholesale trade has been in existence for years in this country. It is no new thing to control the sale of goods of any particular manufacturer. It is needless for me to say where the wholesale trade is of benefit, because it is apparent to everybody. You save money, you save time, you put your retail customers in a better position, you form local distributing centres, you carry many of these men along from year to year who would otherwise perhaps go into liquidation; and if the wholesale trade is carried out according to the practices and regulations of the Wholesale Grocers' Guild, with which I may say I am familiar, you are not only conferring upon yourselves the dignity of an honest calling, but you are protecting the retailer, and you are also reaching out to protect the consumer.

But, like all other agents, it is necessary we should be honest among ourselves, and in saying that I speak as if I represented to some extent, at any rate, the wholesale people for the time being. When we make our contracts, having regard, as I said, to the complicated economic conditions of to-day, these contracts must be rigidly observed. The moment you break the smallest pinwheel of a machine, the machine is out of order. The moment you get grit—I don't mean political grit—into the delicate part of your machinery in a factory, that moment your machine becomes more or less affected. So here. The moment you get any misunderstanding, the moment you have any difficulty arising from the non-observance of a contract or otherwise, that moment your machinery is not perfect and something will go wrong. In a guild, or in a body of men such as I see before me, an organization such as you have here—I should say one dishonest man will upset the calculations and the working out of the scheme of all the other members of the institution.

Effect of Retailers Cutting Prices.

Now about the retailers I shall say very little. That is a subject that, I understand, has been dealth with. But I will point out that the same principles should apply in the minds of the retailers to the wholesale man, as should apply in the mind of the wholesale man to the manufacturer. The retailer is everywhere in touch with the consumer. He is the man that has the last stage in the distribution of the goods, from Montreal, Toronto, Hamilton, Winnipeg, or elsewhere, wherever they may be produced, and each one of these men is more or less dependent on the honesty of his fellows. Take two men in the village. What is the result? They begin cutting prices. They begin struggling for trade not upon an open and honest living profit basis. And what is the result? It does not need me to tell you that one and perhaps both of these men will go under.

Now to keep this state of affairs in check, generally, I may say before I go to the legal aspect of the matter, to keep these in check, it is necessary that you

should have regulations, and I shall tell you later on how far you are entitled to regulate without violating the law. But you have to regulate for several reasons, and I have noted them here in a very simple and itemized manner. You have to regulate this body, and not only this body but trade conditions. First, as I have said, to prevent any dishonesty being carried on, to stop the unfair dealing, to see that your system is carried out in its entirety and in every way to deal fairly and properly, to see that all your contracts are kept, and the contracts of your fellows, and to see after the cutting of prices, which has always been a sore spot with the wholesale man. To see that this is put a stop to, and in order to effect these matters you have a perfect right, as I shall show you in a moment, to pass your regulations and to impose your penalties. If you cannot carry out your system because your rules are not regarded, then you have a perfect right to say, "We will exclude so and so from our exchange," or guild as the case may be.

By reason of many of these violations happening, I am told by some of my friends among the wholesale grocers, the wholesale grocery trade became bad, profits were reduced below a living price, the whole system was disorganized and demoralized. They were carrying a lot of lines at a loss. Even the manufacturers were selling to the retailers over their heads at the same price as they were selling to you. They were depriving you of your market, the only market that was open to you, just as it would not be right for you to sell to the consumer at the same price as the retailer can buy his goods. In other words, they were selling your customers and wrecking your existence, taking away from you the only means of living you had, and as I put it to the court on more than one occasion, the fight you had to make was not for fair trade, the fight you had to make was not for high profits, the fight you had to make, gentlemen, was for your very existence. Hence the organization. Then you had your Guild, or Exchange, or combination. I like the name Guild, because the meaning of that word is plain. It signifies "payment." If you say "guild" it means your word is as good as your bond; that is the underlying principle of the whole transaction—honest, fair dealing.

Pays Tribute to Wholesalers.

What was the aim, as evidenced by many witnesses at the trial, the aim of the guild? First, it was to stop the cutting of prices; second, it was to try and make men, some men, live up to their agreements, and let me pay you the highest compliment any man in Canada can pay to a body of men. Perhaps it has not occurred to you in this concrete form, but let me say as a truth, and take it home to yourselves as a compliment coming from, I may safely say, one who knows from the best evidence that was given: For twenty years this body of wholesale grocers stood upon their rights, and on that twenty years' record they were put upon their trial. The old, dusty letter books that were almost obliterated by age, the old letters where the ink had faded out, the documents and papers and books of account, where you could write what you pleased on the covers—all these things were raked up against the Wholesale Grocers' Guild in the case of the King against Beckett and others; and in all the evidence, with all the force the Crown had at its back; with all the money that they could expend, with the assistance of able counsel and I don't know how many detectives besides, with ways that were dark and tricks that were vain, seeking to unearth evidence which had been left by a dead man; with all that in the whole twenty years' record we only found three dishonest men in the wholesale grocery business of this country! And yet they say "We are afraid the wholesale grocers will combine to the injury of the retailer and the injury of the consumer."

You have to build trade up, you are the gentlemen who have a great deal to do in the building of trade in this country. You have an example set you by two governments at Ottawa, by a system of protection, you have the theory of not cutting prices. Protection was passed for the purpose of doing what? To prevent the prices being slaughtered by foreign manufacturers with their surplus stock.

You, in endeavoring to stop the cutting of prices in your own land, are charged with crime. Fortunately the judge did not look at it quite in that light. This is important to know, and I shall briefly notice it. When this organization was formed you took the precaution, and a very wise one, to say "We will not exclude any wholesaler. We shall not determine who shall be members, the trade or business of the man shall determine that. If he is a wholesaler, he shall come with us; if he doesn't choose to come he can stay outside; he shall receive exactly the same benefits as we have, without perhaps any of the responsibility." That was the distinguishing feature of your Wholesale Association. No man was prevented from getting his goods. The only test was this: If you gentlement in Toronto, and Montreal, and elesewhere, you producers, employ us to act as your distributing agents you must not sell to our customers at the same rate as you sell to us.

It doesn't need any argument to convince anybody that that was commonsense and fair play and the honest way of doing business, and whether a wholesaler belongs to the association or not he would be entitled to get his goods at the same rebate, royalty, or otherwise, as you were able to as members of the guild, and he would save his admission fee and his charges for lawyer's fees.

What do we find with all this cry against the wholesale people? We find this singular fact. Not only were you generous enough, not only was the wholesale trade generous enough to say, "We won't exact membership as a test; the test shall be a wholesaler or not a wholesaler." Men who never saw the inside of the Wholesale Grocers' Association room got their goods, got the same rebate and the same protection as you did. More than that, men like Mr. Eddy, like Sir William Macdonald and others, had old customers who had grown grey in their relations, and as a matter of sentiment you respected that and never objected to their selling to a few man who were old friends of theirs, and they have continued to sell to them as retailers at the same rate as they were selling to you. I ask, where you could find a body of men who were as generous as that? It would be a crying shame if there was a law upon our Statute Book that would hold them responsible for any kind of a reasonable and proper combination such as this was shown to be.

Case of Patented Articles.

There are some things, as I have said, in view of the general conditions of matters, I should like to point out to you as things that would be perfectly legal to do, and I have taken some little care to put them in a shape that cannot be objected to. In the first place, as I pointed out, it is perfectly legal for the manufacturer to fix his own price. If it is a patented article he must place it upon the market at a reasonable price, because he has been given a monopoly by the Crown to manufacture that patented article to the exclusion of everybody else, and the Crown says, having given you a seven year monopoly, with a renewal perhaps for seven years more, you must meet the public requirements. There can be no competition in that patented article, and we will so enact by legislation that you shall not be allowed to charge an extortionate price for that particular article.

But even with the patent you do not destroy competition. Why, look at the condition of things in regard to sewing machines and bicycles. I have never had much use for a sewing machine, but I know something about bicycles. Ten years ago you paid $125 to $150 for a bicycle you can get to-day for $40 or $50, although it may be in part patented. Thirty years ago, you would give $30, $40 or $50 for a hand sewing-machine that will cost you $10, $12 or $14 to-day. And why? Notwithstanding the protection by patent there was the striving by others to enter the field against the patent, and so successful were they in some cases that the patent was not worth the paper it was written on, commercially speaking.

When Combines are Legal.

But leaving the patent question out, you have the right to say to manufacturers;—"Fix your own price." And if the tobacco man, or the sugar man, or anybody else, charges more than a similar or a little inferior article can be bought for elsewhere, he will soon be out of business. Trade regulates itself. All we want is a good straight, stiff, honest backbone at the back of it. I say manufacturers have the right to fix

the price. I say also the wholesale grocers have the right to combine honestly for self-preservation, and that is the very essence of the King and Beckett.

There is a sort of feeling generally amongst people that a combine is illegal. Nothing of the sort. A combine, as we understand the word ordinarily, is just as legal as anything else; but you must not so combine as to produce the injurious effects mentioned in the Statute. You must not do it for the purpose, bear in mind the expression, for the express purpose or even the incidental purpose, of enhancing prices. You must not do it for the purpose of limiting competition, or to interfere with the cheap and rapid transportation of goods. But for the protection of your own trade, for your self-preservation, a combine of the closest and most vigorous character is just as legal as anything else. This is one thing you can do. Another thing you can do. You can make your arrangements with the producers or the amnufacturers to be their exclusive agents, and say to the manufacturer, "If you are going to employ people other than ourselves we won't act as your agents. Take the other people; leave us alone." That is perfectly legal. There is some hazy idea that this is preventing other people from trading. Not at all. I have a perfect right to go to the Massey-Harris people and say, "You appoint me, or myself and the chairman, as agents in the County of York for the sale of your goods exclusively." I have a perfect right to do it. The chairman and myself have a perfect right to say, "If you sell through anybody else, even if you yourselves sell in the County of York, we won't sell your goods." It is perfectly proper and perfectly legal.

The Breaking of Contracts.

Then you have this further right. You have the right to say, "You shall not deal with a man who is a contract-breaker." I am not bound to sell my goods to every man who comes in. I am not bound to produce goods for any man who chooses to come along and say: "I want so many goods, and I am willing to pay for them." I have a right to ascertain the character of the man I am dealing with, and I have a perfect right to say I shall not sell to a man who has red hair or black, as the case may be.

Why should not I? I control my own situation. No reason in the world why I should not. And if you find a man is not keeping up his contracts, if you find he is not an honest man in respect to his contracts, you have a perfect right to say: "We shall not deal with that man." You have a perfect right to see that the agreements upon which you shape and mould your business are kept; a perfect right to say these agreements are a part of the system. When you break any of the agreements you jar the whole system, it affects our business, our trade and our reputation, and you have a perfect right to see that these agreements are not broken. And you have the further right (keeping within the lines I have indicated) to regulate these by penalties. No company could live unless it had some power to impose penalties, either under its charter or under the general law of the land. Take any company, I don't care what it is. In dealing with certain stock—I am speaking of share stock—in that company, a man does something that is wrong. If you had no control over that man your company could not continue to exist. The general law of the land applies to him, but you have just as much right, so long as you keep within the limits I am indicating, to impose your penalties upon that man within your internal organization and your internal powers as you would have if the general law of the land did not apply to the case in point.

Must Act in Good Faith.

You have a further right—and this is perhaps the widest right you have—you have the right to do all things necessary to protect the interests of your business, provided they are done in good faith. Of course, if you once have malice against a man—say there is a man John Smith: "I have got my knife ready for him, and I am going to see he is cut off"—there you are actuated by an unlawful motive, a malicious motive, you have an ulterior object in view. But if you act in good faith, having the grounds for your action that for some reason or other it is necessary in the interests of your business—without exceeding the proper limit, without exceeding any legal rights at all, even if injury may come to a man through your act, that does not make your act illegal if it is done in good faith in the interests of the preservation of your business. I will illustrate what I say by reading an extract, to show you there is law upon the point. We have the law laid down by no less a Judge than Sir Glenholme Falconbridge, Chief Justice of the King's Bench, following the judgment of the late V. C. Strong:

> "It would be dangerous to accept as a settled doctrine of political economy or proposition of law, that under any and all conditions, and at all times, every man or corporation should be declared to have an absolute and inalienable right to buy and sell, trade or barter, with any other person or corporation, without restriction as to quantity or price."

We have such a man as Lord Herschell, in England, in the Court of Appeal, saying:

> "I do not doubt that everyone has a right to pursue his trade or employment without 'molestation' or 'obstruction' if those terms are used to imply some act in itself wrongful. This is only a branch of a much wider proposition, namely, that everyone has a right to do any lawful act he pleases without molestation or obstruction. If it be intended to assert that an act not otherwise wrongful always becomes so, if it interferes with another's trade or employment, I say that such a proposition in my opinion has no solid foundation in reason to rest upon."

That is the judgment of one of the highest courts in England.

A well known and authoritative author, Eddy on Combinations, says:

> "The right of a combination of dealers to advance their own interests by mutually agreeing to decline to deal with any manufacturer or wholesale dealer who should sell directly to their customers has been broadly upheld."

That is what I am contending for. So long as the objective point is the self-preservation of your business, is the interests of the business, although it may wipe other men out of existence, that is a matter of no consequence so long as it is done in good faith and not for any ulterior purpose.

And then we have the language of Chief Justice Falconbridge, who decided the case of the Guild. "The various cases of alleged oppression and 'driving out of trade' of persons who either openly, or by some ingenious device, aim to belong to the wholesale trade, and at the same time sell at retail, are thus easily understood. If this system were to be practised, it would injuriously affect and demoralize the trade, not only of the wholesaler, but of the retailer, and the consumer would certainly not be better off in the long run."

Things That are Illegal.

I have told you the things that you may do. I will tell you now the things you cannot do; and they are very few.

First, it is illegal to combine with manufacturers to fix prices. You leave the manufacturer alone, trusting to the tender mercies of your executive, Mr. Beckett, Mr. Blain, and a few others; their work showed up fairly well at the trial. Let your dealings not be with the manufacturer as to fixing prices, because that is an illegal combination. It is illegal to exclude wholesalers from your organization if they desire to join, because you would have no right to determine who should be members, except by the broad test of qualification. You would be taking upon yourselves to personally discriminate, a thing which is not permitted in law.

Another thing you cannot do primarily, although you may indirectly, or rather, it may be the result of what you have legally done. You cannot enhance prices by combinations or agreements or arrangements. The law positively says that is wrong. As I pointed out, you may do a great many things that may have the effect incidentally of increasing prices, but you cannot devise a scheme for this purpose. It must have the foundation of necessity and the saving merit of being in your own interests and in

the interests of your own self-protection.

Another thing you cannot do. You cannot by any means known to the law, although I am afraid it is sometimes done—you cannot coerce any man into your belief or your system or your method. Every man has the right to his individual opinion, to exercise his individual act; and the moment you attempt anything that shows there is coercion against an individual, that moment you are within the scope of the law.

Expounds Secret Commissions.

Having said that much, perhaps more than I should have said, let me call your attention to an Act that was passed a short time ago, and let us see where that leads us. If I am right, in what I have pointed out in regard to the condition of trade, the necessary incidents of it and the necessity for the present division you have got of your three classes, then we find the law protecting that state of affairs if honestly carried out. There was a great deal of trouble in regard to many commercial matters as between agents and contracting parties, and Parliament passed an Act dealing with that very subject, and that is known as the Secret Commissions Act of 1909.

Under that Act an agent means any person employed by another. The first section or two does not apply to the case which I understand will happen even in a well-regulated family like the Grocers' Exchange. In the desire for business, and in the effort to make big returns, and sometimes perhaps if the agent is paid by commission, in his self-interest he will go to the retailer and will say, "Here are so many packages; they will cost you $12." The retail dealer says, "No, I won't buy them. I believe I can get them cheaper from another man." The agent says, "I will allow you a rebate," and he does it in this way. He says, "I will give you a dollar," or fifty cents, as the case may be, which would be a very high percentage upon a twelve-dollar lot of any particular article. He gives him the fifty cents, or the dollar, the man buys the goods, and gets his rebate in that surreptitious way. The agent, if his principal is honest, dare not return it to the principal, because he knows his principal is under a moral, if not a legal, obligation, not to sell at less than a fixed price. He returns it as his expenses, sends in the voucher and adds the fifty cents to the week's account. He has got the order, and thinks he has done an honest transaction. A great deal of wrongdoing may take place in that way, but when we come to the Act, whatever view may be taken of the earlier sections—I have some doubt myself as to how far they apply—but when we come to Section (c) of the Act you will find this, "Being an agent," that is, a person employed by another—"being an agent, knowingly uses, with intent to deceive his principal, any receipt, account or other document in respect of which the principal is interested and which contains any statement that is false or erroneous or defective in any material part, and which to his knowledge is intended to mislead the principal."

What the Penalties Are.

The man who does that is liable on conviction to two years' imprisonment, or to a fine not exceeding $2,500, or to both. The agent violates his principal's contract by selling below the fixed price; he is cutting the price. He is not doing it in the interest of his principal, because his principal loses the fifty cents or the dollar, as the case may be—I am only taking this small amount to illustrate. He is using his principal's money for a certain purpose that is not proper, and in addition to that he is returning his voucher to his employer, which is false and intended to mislead his employer, because he wants the employer to believe that the fifty cents was traveling expenses, or traveling allowance, instead of the rebate, which was an unlawful act.

It is well for the wholesale grocers to know this. But apart from that let us see what the statute says. We have a particular statute known as the Criminal Code, and I have summarized a section in order that it may read to you intelligently. Statutes are often passed which are not intended to read intelligently, because if they did and any man could understand them, my occupation would be gone.

This is Section 415 of the Criminal Code, which I have summarized, "Any person being a clerk or servant who falsifies any book, paper or writing, or makes any false entry in any book, paper or writing, belonging to his employer, or that has been received by him on behalf of his employer, or concurs in the same being done, is guilty of an indictable offence," and liable to maintenance, food and clothing at the expense of the state for seven years.

I say that the agent who goes out, without the knowledge of his principal, and does these things for the purpose of cutting prices, will find himself in grave difficulty some day, if not under the Secret Commissions Act, at any rate under Section 415 of the Criminal Code.

Now just a moment with regard to the Secret Commissions Act, and see what was intended to be covered by it. The Secret Commissions Act was intended primarily, no doubt, to prevent violation by agent under contracts of various kinds. The consideration, of course, to the agent that is mentioned in the Act would be the man buying the goods. It is to the personal advantage of the agent that he sell the goods, it is to the personal advantage of the agent that he extend the business of his employer, because so will he be rewarded, not only here, but hereafter. Under that condition of things, to begin with, the account he returns to his employer, is absolutely false; and let me say, if the wholesale grocer stands in with his agent in the deal and knows it, and authorizes it, either expressly or impliedly, the agent is not responsible. But I am taking a case where the agent does it on his own account, and for the purposes which I have mentioned.

To Bring About Honest Dealing.

The object of this Act was manifestly this: to keep the agents and all persons dealing with them, honest. That is the first proposition. The principal, the wholesaler, is not there; he has to trust his agent, he cannot go round and control every act of his traveler, he cannot see that the law is carried out or if his contracts are carried out; he must trust his agent, and it was important that some safeguard should be given to the employer in regard to the conduct of his agent, so that if he did that which was illegal he might be reached in some summary way.

The second object of the Act was to prevent the rules and contracts and regulations of the employer from being broken. Otherwise there would be no check. An agent could go about and break all the rules and regulations you could put in force. Then the third object was apparently to prevent collusion between the agent and the person he was dealing with, which was one of the most important elements of the Act.

Now you see how readily it could be done in the way I have indicated, and I am told that is the way it is done. I am advised that is the fact, and I am pointing out that that being the fact, such a man is liable under the section; and if he is not liable under that, he is clearly liable under the section of the Code.

I have just a few words to say about the cases which have been decided in our Canadian courts.

Decisions re Combines.

It is a matter I should like to speak to you about just for a moment. There is a great deal of misapprehension with regard to what has been decided by the courts in regard to combines. I am going to tell you briefly what has been decided in this country. In the Elliott case, the Ontario Coal Association, of Brantford, they had a list of members, and they refused to take in more members, although those seeking admission were on the same plane and belonged to the same class as the members who arrogated to themselves the right to control the coal situation. And the reason given on the by-laws was, they called them "eligibles"; and a man was only eligible up to the point when the company could not stand any more competition. In other words, as soon as they reached the high-pressure of competition the eligibles were shut out. They prevented other dealers from joining the association. The wholesaler couldn't get his coal, although he was in the same line of business as the members of the association.

The object was, under their articles and by-laws, to prevent anybody but the gentlemen who formed the combine, to prevent anybody, no matter how well qualified he might be, in the same line of business, and entitled to the same rights—to prevent these men getting the

coal. The test of admission was not, "Is this man a wholesale coal dealer or a coal jobber?" The test of admission was this: if there were enough members to exclude competition nobody else, not even the proverbial Irishman, need apply; because he would be shut out. The whole object was to keep down competition, and therefore the court very properly said: This is the worst kind of combine. It is a combine to make money, pure and simple, and therefore it is illegal.

Take the Clark case; a Manitoba case. There the retail dealers were combining. It was only such retail dealers as the directors of the company determined by ballot or otherwise that could get into the association. Every retailer couldn't get in—only the favored few. A by-law fixed the prices, mark you. They combined to fix the price, combined to determine who shall and who shall not be members of this close corporation. They determined the price themselves, not as where the manufacturer determines it, in your case; or as where any wholesale man coming along with a clean record is welcome to join your association. Not that case at all. There the dealer was not joining as a retail dealer carrying on business. That was not the meaning of the word "dealer." The word "dealer" as declared by the by-laws of that association meant "member," and a man who was not a member was declared not to be a dealer.

These people were dealing directly with the consumer, and the result was immediate. You hadn't to go through two or three channels, the price was at once fixed by these men, and at once myself and the million other consumers, whoever they might be, had to pay that increased price.

In your record of business, matters are entirely different. Strange that with all this talk about combines, you can buy sugar to-day cheaper than you could twenty years ago. Singular thing that you can buy better tobacco to-day and cheaper than you could ten years ago, although I am told some of the producers are compelled to put it up a little lately owing to trade conditions.

Case Against the Plumbers.

You have made no attempt to enhance price. The effect, as I pointed out, might, under certain other conditions, have been to enhance, but the object was not to increase, and, as I say, the Clark case differed upon that particular point. Then there was another case—you will remember the plumbers' case. Well, we have no sympathy with the plumber. I tell you that much to start with. He did what was manifestly a very risky thing, not even the semblance of such a thing as was at any time done by or among the members of the Grocers' Exchange. I have no hesitation in saying of your combination, and I think it is a praiseworthy thing to say, that you have sense and honesty and courage enough to go out and say, "Yes, against all dishonest dealing, against the contract-breakers and the cutting of prices, we will combine."

But in the plumbers' case, when they got up steam, they got to this stage: that the dealers in exactly the same class as the association members could not buy from the producers or the middlemen; could not buy at all from them except at an advance. They could not even buy at the price the men in the association were buying at. But if the master plumbers, not being members (this is your case) had been able to go into the open market, being equally qualified with the members, and buy at the same price, there could have been no case against them. Instead of that, they formed a combination outside of that, and said: "Here is the supply house; you must get everything from that supply house, and at the end of that time nobody but members could get anything; and in the meantime there was this supply house enabling the members of the association to get their goods; and at the end of certain periods of time they would divide up the whole business and make the profits. And so the court properly held that this was an evil combination, and one which ought to be punished by law.

In this matter we find the same principles that governed and were approved of in the Gage case, the Ontario Salt case, Gibbons and Metcalf, and a number of other cases. The same principles as were adopted by the Wholesale Grocers of this country governed in these cases, either here or in England. The courts said: "You have not violated the law, you have acted within not only the letter but the spirit of the law, and you shall not be punished for any of these things; they are not a violation of any statute of the land." And that is the position; that is how the matter stands.

On Business Integrity.

Let me say a few words in conclusion upon the matter of business integrity which is always important. As I pointed out in the beginning, general remarks are sometimes not valuable, general reasoning is not of great value to the people who hear it nor to the man who reasons. We have to get down to something like fixed, concrete principles, and see just where the generalities lead us to.

It is very well to say that the combination, or that the general conditions, or the exchange of trade, or whatever it may be, require certain general things to be done, but we ought to inquire first of all what are the real objects of such a combination or of such an association as this.

As I have worked it out in my own mind there are four things to be sought. Each one laudable, each one praiseworthy, each one something we ought to be proud of if we attain to. The first great object of an association of this kind, or of any guild, call it by what name you will, is to preserve the sanctity of an agreement. I care not what means you employ, I care not how hard it may press upon some people or their business; remember that one of the great things to be sought for by any aggregation of men, whether in trade or commerce, or in the private walks of life, whether publicly, politically or otherwise,—the great thing is to preserve the sanctity of your agreements.

The second is, that in all organizations composed of honest men, doing an honest business, it is necessary to maintain loyalty to each other—no underhand dealing, no taking advantage in some concealed or surreptitious way, but that open, frank, outspoken loyalty, shown in words and in deeds; the confidence that one man must have in another, and in the loyalty which his fellows show to him and to the objects of the institution to which he belongs.

Considering the condition of matters, do not look upon your business as a mere money-making concern; because the man who spends his life gathering coppers together and storing them away and denying himself any little luxury he might otherwise have, that man is not pursuing the object of his life at all. That man is not living the life of a citizen. I say, therefore, that the third great cardinal principle is to look upon your business as a trust given to you to guard and watch and carefully protect.

In your hands lies the destiny to a great extent of a very large proportion of the trade and business of the Dominion of Canada, and as you carry on that business so you are stamping upon it the sacred character of a trust given into your hands; or by taking another course you will have the demerit of having abused the confidence that has been placed in your power.

The fourth is, that you should seek in all your regulations and all your rules to not only advance your own interests, which is the bounden duty of every man to do, but you should to the utmost extent protect the interests of your fellows in business.

Those four cardinal rules, take them as your charter, take them as the foundation of all proper, honest trade and business, and you won't go far astray no matter what means you adopt to carry out those principles. By accepting these, you at once raise the moral standard of trade and business in this country. You elevate the tone and character not only of your own business, but of the whole business of the community. By so doing, you purify the channels of commerce from one end of the country to the other, and even beyond the limits of this country. In your dealings with the English and German and American markets the same principles will hold good, no matter what the class of people may be you are dealing with. Purify the channels of commerce; you have nothing to dread and nothing to be ashamed of; and by these means you will become in fact as well as in name, the merchant princes of the land. Your own lives will be better and higher in their ideals by pursuing a course such as I have indicated; your citizenship will be loftier in its aims and purer in its objects, and your duty to the State will be more faithfully and more fully discharged. Private life is a reflex of our business dealings. Do not run away with the idea, do not let any of us run away with the idea that we can be pure in private life and impure in our public transactions.

And let me say that as you improve the character of your public calling, so will your political, religious and moral conduct add to the national reputation and integrity of the great Commonwealth under whose broad banner of liberty and fraternity you live in the enjoyment of all the benefits and privileges of free, individual right of thought and action.

WATER USED PER PERSON.

Editor Plumber and Steamfitter.—Can you tell me how much water it is figured that each person will use per day in houses where a plumbing job is put in? This is quite necessary to know sometimes, when one has to figure on a building where several bathroom outfits are to be put in.

"READER."

Niagara Falls, May 8.

The quantity of water which will be used for such purposes as our correspondent mentions varies somewhat according to the ideas of the different families. Some are much more cleanly than others, and will use nearly double the amount of water consumed by the average householder. Therefore, in estimating, it would be well to rather size up the customers before making any definite figures. We may say, however, that it is generally considered that each person in the house or flat will use in 24 hours an amount of water varying from 20 to 35 gallons.

In estimating for the sizes of your sewer pipes it is a mighty good plan to have them just large enough to flush in such a manner that they will cleanse themselves. It is as big a mistake to have them too large as it is to put them in too small, as in either case they will be sure to stop up in due time.—D. C.

WHICH GAS IS HOTTEST?

Editor Plumber and Steamfitter.—Can you tell me which gas is hotter the natural gas, which comes from the earth, or the commercial or artificial gas manufactured by various gas companies throughout the country? There's a dispute about it in our shop and I'd like some information.

G.B.M.

Brantford, May 3.

At present writing we are unable to lay our hands upon any definite statistics upon this subject, but can quote several instances from actual practice. The writer at one time lived in a natural gas country, and noticed that when boiling potatoes they would cook in easily one-third less time (by natural gas) than by any other kind of fuel he ever saw tried. Also when using the gas to heat solder in the shop the solder would heat up so much quicker than was anticipated that it was a constant surprise.

Perhaps some reader will be glad to send us a few lines upon this subject.—D. C.

TRADE PROBLEMS ANSWERED.

Inquiries Solicited From Readers, Who Run Across Problems Which are Unusual—Just as You are Interested in Reading the Questions Asked by Another Man in Your Trade, so Will the Other Fellow be Interested in Your Problems—Send the Queries Along and We'll Answer Them—or try to.

BEST FORM OF RADIATOR.

Editor Plumber and Steamfitter,—Will you kindly tell us whether single, double or three (or more) column radiation is best as regards the heating capacity, and why?

DOUBTFUL.

Montreal, May 7.

It is considered by some of the best heating engineers that single column radiation is the most effective. One reason given why single column radiation is more effective per square foot than double or three, etc., column is that the single column radiation can radiate heat in all directions (nearly), while in the double or three column, the inner sections do not, from their position, have a chance to radiate equally with the outside sections.—D. C.

"BULL HEADING" A TEE.

Editor Plumber and Steamfitter.—Please state why it is not proper to "bull head" a tee in either steam or hot water heating.

AN APPRENTICE.

Toronto, May 12.

Because it affords too much friction in the first place, and second in hot water heating one side of the piping from out the bull headed tee may rob the other. A double or twin ell should be used which will have the effect of properly dividing the flow of either steam or water.—D. C.

VACUUM SYSTEMS.

Editor Plumber and Steamfitter,—We sometimes see various articles in the papers about different systems of vacuum heating, but I do not remember of ever having seen a general idea given relative to the difference of principle. Can you illustrate the same by giving a short and clear description?

INQUIRER.

Edmonton, May 2.

There are many different vacuum systems, but they mostly reduce to two principal classes. The first class is where the air is drawn from the radiator by using an air pump and a special form of air valve. The second class is where the radiator is hooked up to a patented return valve and a vacuum is kept upon the return lines.—D. C.

STERILIZING WATER.

Ultra violet rays have proven effective in sterilizing water, and, although the process would seem to be rather expensive, the Westinghouse Co. in France has been planning to substitute this method for ordinary house filters.

The action of the rays in destroying bacteria has been known many years. In late experiments, made by M. Victor Henri, the limitations of the action have been tested, and it has been shown that the voltage of the lamp producing the rays, the distance from the source of the rays, and the clearness of the water are all to be considered.

With a Cooper-Hewitt lamp of 110 volts immersed in water containing certain bacilli, sterilization required an exposure of 300 seconds at a distance of twenty-four inches and only four seconds at four inches.

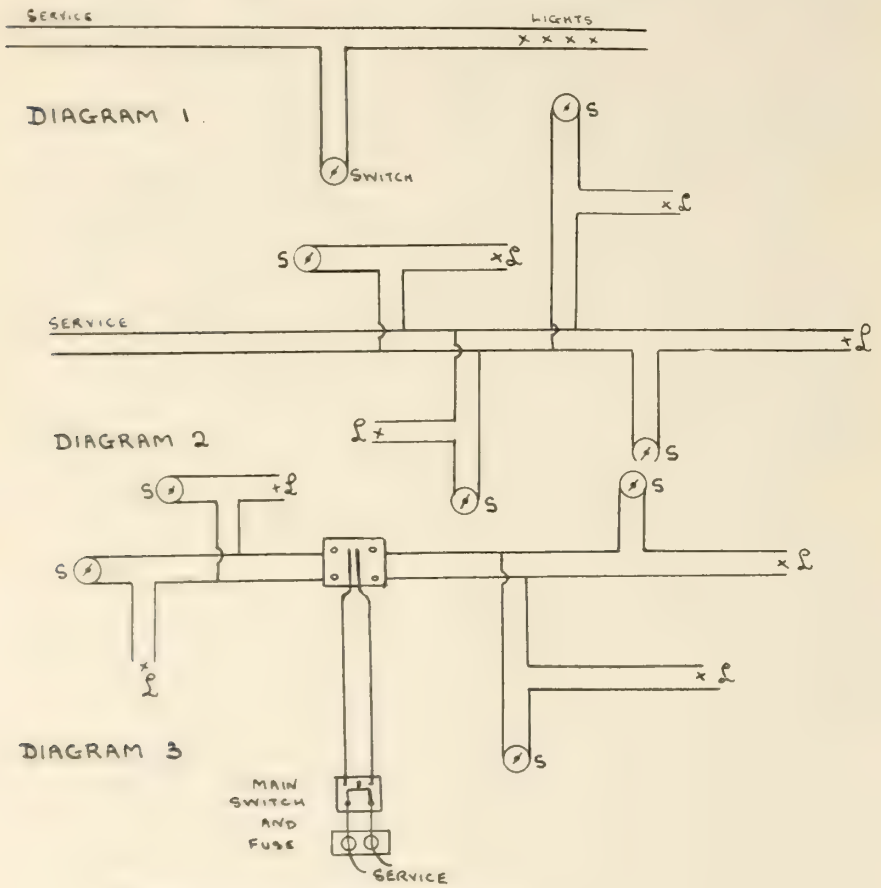
Increase in voltage had striking effect, and with a lamp of 228 volts, sterilization at twenty-four inches required but thirty seconds, and at four inches, less than one second. In turbid water only very thin layers are sterilized.

Practical Pointers About Electric Light Wiring

Plumbers in Small and Growing Towns Often Have Opportunities to Undertake Wiring Jobs, and on Account of Lack of Knowledge Lose Chances to Make Money.

Written for The Plumber and Steamfitter, by F. G. Stroud.

A stock of No. 14 gauge rubber covered wire, for house wiring and No. 14 gauge weather proof wire, for workshop or factory jobs, should be kept on hand by every plumber who undertakes electric wiring work. No. 5½ split knobs, "two-wire" cleats, screws, friction tape, cleat rosettes, lamp sockets 3" x 5-16" porcelain tubes, lamp cord, fuse blocks and snap switches should also be kept in stock.



Sketches Showing Methods of Wiring Electric Jobs.

Wiring a Store.

There are several methods of doing wiring jobs. Take a store for instance, the owner might object to having the wires run exposed on his ceiling. To conceal the work it would be necessary to take up the flooring upstairs. The wires could then be run through the joists or along the side of the joists. Where the wires run through the joists then holes 11-16 inches in diameter should be bored so that the wire can be insulated from the wood by a 5-16 inch porcelain tube. Where the wires run in the same direction as the joists, then support the wires every four feet, with a split insulating knob.

Wires should be at leat 3 inches apart, and where one crosses another then insulate one with a tube, and tape the tube to the wire to prevent it slipping away.

The wiring should not touch wood any place, but be supported by porcelain knobs or suspended through the joists with porcelain tubes, to insure safety from fire. If the wires come within 3 inches of a gas or water pipe, protect the wire with a tube. Live wires rubbing a metallic surface have caused many a short circuit. A bare spot on one of the wires and making contact with a pipe will cause a "ground." Then the meter registers faster than it should do, and electric light gets another knock because of its high cost.

Where it is not necessary to conceal the wiring, the wires can be stretched along the ceiling and supported with "two-wire" cleats, about four feet apart. Concealed work is far more satisfactory, cleat work or exposed wiring being very unsightly, as well as likely to cause trouble on account of interference by irresponsible persons.

Wiring a New House.

New houses can be wired at the same time as the plumbing is being roughed in. Where necessary bore the joists, use the tubes in the holes, and when the wires run in same direction as the joists, stretch them along the side supported by split knobs.

Never figure on more than 12 lamps to one pair of wires, or as it is called, "a circuit." If you have 20 lamps to wire for, run two circuits with 10 lamps for each circuit. A circuit with too many lamps on it is liable to overheat and cause a fire, or at least, dim the brilliancy of the lamps on account of too much resistance in the circuit.

With a six-roomed house, one circuit should be enough to carry all the lamps. Run the feed wires to some point convenient for the power company to connect to. At the place where the service enters the house, fuses and a two-wire switch should be connected on.

Where more than one circuit has to be used for feeding the lights, then the circuits should be brought to some central point in the house, such as the landing of a staircase. Here each circuit should be fused separately, (Diagram 3). A heavier pair of wires can then be used to feed all the circuits and carried to the service connection.

A house, store, or factory being wired for 48 lamps should have 4 circuits of No. 14 gauge wire with 12 lamps on each circuit. All circuits running to some central point, connected up to cutout fuse blocks. To feed the four circuits No. 10 wire should be used as feeders.

In Toronto, where the fire underwriters' rules are strictly enforced, the circuits are all brought down to the cellar. A conduit pipe carries the feed wires down the side of the house (outside), and into the cellar.

There is seldom much profit made on wiring jobs, but a plumber can often secure a plumbing job easier by taking the electric work, and then he has a chance to make a profit by supplying the electric fixtures.

The Illustrations.

Diagram 1—Shows a simple circuit of 4 lights all controlled by one switch, common with workshop and store wiring.

Diagram 2—Is a circuit of 4 lights, each light controlled by a separate switch.

Diagram 3—Shows 2 circuits with 2 lamps each with separate switches, connected to double branch fuse block, feeder wires running away to service connections.

The Rights of a Plumber's Apprentice

More Wages and Less Cussing Will Develop Better Workmen —Ignorant Apprentices Liable to do More Damage Than Good —Value of Knowing How to Draw—Should Also Read Books and Trade Papers.

(Written for The Plumber and Steam-fitter by Charles H. Denison.)

It's a cinch that many of the master plumbers and steamfitters have never thought that the apprentice had any rights at all. Otherwise long ere this we should have had a different brand of workmen in this business. The craft does not draw the best minds to it and one reason is the unfair treatment given the apprentices and helpers, both intentionally and through blamed indifference. The average master is out for the dollars, and indeed so hot is he upon their trail that he overlooks matters directly under his nose which would benefit him in many different ways were they given the proper attention.

Now when a boy goes into a shop and gives his entire time and attention toward learning the trade and doing such tasks as may be given him, he is clearly entitled to certain things, one of which is fair pay for his labor.

In many cases when boys go into shops, in the smaller towns, they are paid from three to five dollars a week for a long time after they start. Now a boy of eighteen to twenty is certainly worth more than that and he knows it and gives his services elsewhere rather than submit to such an injustice. He could shovel dirt and make more money per day. This is one reason why many bright boys do not start in the shops. They get into other lines. The boy is also entitled to decent humane treatment, and I want to state right here that the cases are mighty numerous where he does not get it in the average shop. The helper is cussed long and loudly and about all the mistakes which occur are thrust upon his shoulders. He certainly is the "goat." What wonder then that he becomes impudent, careless and indifferent, and finally quits or plays some contemptible trick for which he gets "fired?" Put it up to yourself and see if you wouldn't do pretty much the same thing. Haven't you been going around with your knife out, for the last six months, looking for a chance to stick it into Jones, because he got the best of you on that bath room deal?

Boy Resents Ill-treatment.

Therefore a boy with the faintest share of self respect will quit such a job and shop before he will submit to being treated in such a manner. He wouldn't have much "sand" unless he did quit and would be a mere worm all his life at any old place.

Another point (and this applies to the journeyman exclusively) is that many times when the boss is out of sight if the helper happens to be a willing boy or somewhat husky, the fitter or plumber will put off the bulk of the work upon the lad. I have known of instances where a helper at a dollar a day has done 90 p.c. of the hard work on the job, while the journeyman at from $3.50 to $5 a day either stood by in idleness or else was "rushing the can."

The helper is also entitled to certain definite instruction in the details and workings of the craft. He should receive same just as fast as he is able to master them. You want to remember that what you hold back is just so much out of your own pocket. An ignorant apprentice is an expensive and a dangerous proposition, liable to do more damage than good. If he does probably nine-tenths of the fault rests upon the master's shoulders for withholding instruction in the business to the lad. A boy can't be held responsible for what he has not been taught. We expect a fitter or plumber to use his natural common sense and judgment, and to accomplish things sometimes the like of which he has never before seen, but you can't require nor expect the same of a green or partly experienced boy of from 7 to 19 years of age. Many masters do and that is where they fall down and display a lack of judgment. The boy can get along anyway and I am going to give a few tips which may assist some youth who happens to be working in a close-mouthed shop or "home guard" town where general information seems to be held as priceless.

Should Learn to Draw.

The apprentice should learn to draw. There are not two fitters or plumbers out of ten, far and near, that can do so, yet it is one of the things that is very necessary in the business and is getting more so every year. These drawing lessons should include practice in drawing the different fittings, fixtures and plans which are used in both plumbing and heating jobs. When you get into the actual business you'll realize the helpless feeling which one has who is unable to make drawings, but would like to. It's a big handicap not to be able to draw.

While learning the trade the youth will have several evenings spare time each month, and instead of spending it in foolish or bad pursuits, he should study and make good use of these spare moments. There are night schools (if one is deficient in the common or business branches) technical and correspondence schools, all of service in rounding out one's general fund of knowledge of the game of life. From any or all of these the youth can derive information best suited to his needs, and every dollar so invested will bring in big returns a few years later. This is simply plain, practical, common sense and no sermon.

It stands to reason that the better posted one is regarding his trade or business the more chances he will have to get ahead in life.

The man who can draw plans and who has a good knowledge of the best and latest points upon heating or sanitation has a big advantage over the party, who is ignorant of such matters, and the posted man will, in due time, become foreman and shortly be running a good business for himself, while the other will always remain "only a plumber," and the chances are a mighty bum one at that.

Read Technical Books.

Many excellent books have been written upon both heating and plumbing in nearly all branches of both crafts. These books are not all of them filled with algebra and formulas, and some of them are quite within the range of a very ordinary education. Suppose, however, they are a little "over one's head?" Do you always want something just within your comprehension?

How will one improve or increase the fund of knowledge unless, occasionally, problems are encountered which require study and thought and instruction along lines upon which we are weak?

Some of these instruction books are sold as cheaply as twenty-five cents per copy, and the appretice who will not buy and read such books, simply don't want to get ahead and had better get out of the game entirely. It has been held that the knowledge gained in the shop was the most definite and that actual daily practice was the only correct school.

That is mighty good so far as it goes, but the point is that in this 20th century mere shop practice does not go far enough. New appliances are being put upon the market constantly. The plumbing regulations differ exceedingly in different sections of the world. The practice of a country shop is quite dif-

ferent from that of a shop located in a large city. People are also becoming much more enlightened upon sanitary and heating matters and are demanding better laws which shall prohibit the installation of unsanitary plumbing and inefficient heating. The best books obtainable should, therefore, be read by those who desire to obtain the latest and fullest knowledge of the business.

There is also another field of information open and that is the literature offered by various trade journals which are published exclusively in the interests of the plumbing and heating crafts. These papers contain the latest, best and most accurate information obtainable regarding everything which relates to or could be of any possible interest to any one in the business, be he master, journeyman or helper.

The information comes from widely different sources and if the ordinary subscriber took one-tenth as much interest in his trade paper as do the men who make it up, from year to year, the knowledge of the plumbing and heating business would go forward by leaps and bounds, instead of crawling forward at a snail's pace. Don't get "struck in a heap" because you fear that you might get hold of a new idea. Many in the game are and they'll always remain the "last part going over the fence."

A Practical Illustration.

To show the power of a trade paper I want to quote an instance which I know to be true in every respect. A certain man who was a salesman, but who had not a full knowledge of the business decided that he ought to become better posted. Therefore he subscribed for a certain trade paper which dealt entirely with plumbing, heating and the gas businesses and crafts. He read and studied each number of this paper thoroughly for a little over one year and then just to test his knowledge took an examination for a plumber's license and passed among the very highest of all who submitted papers on that particular occasion.

I am not "shooting the con" into this article for stage effects. This story was well certified to at the time and is one which simply goes to prove that any reputable trade paper in our line, if used properly, will produce mighty effective results. Therefore invest a few extra dollars along this line by becoming a subscriber to one or two good trade papers and you also will find them your best friends.

Observe the new ideas or different ideas that are given and apply such as relate to your case to your own sphere in life, but never allow yourself to think that you know it all or are too old to learn.

Gossip of the Plumbing and Heating Trade

Items Gathered in all Parts of Canada—Letters Invited From Subscribers, Giving Particulars Regarding Changes in Firm Names, Contracts Secured, Novel Methods of Advertising or Other News—Photos of Anyone or Anything Connected With the Trade Also Welcomed.

Thos. Neving, tinsmith and roofer, Ottawa, is dead.

The tinsmiths of Kingston received 15 cents a day increase in pay on May 1st.

Hayward & Dods have taken out a permit for a new plumbing shop on Fort Street, Victoria.

Macdonald & Sons, Montreal, are opening a branch of their pipe cutting machine business at 109 Church Street, Toronto.

Donald Cummings, for many years foreman of Macdonald & Co.'s plumbing shop at Halifax, has resigned his position.

W. G. Downs, of the Ideal Mfg. Co., Windsor, Ont., has been busily engaged in booking orders in Montreal. He secured some fine orders.

Wm. Sutherland, 1502 Queen Street West, Toronto, is a plumber who is conducting an up-to-date cigar store in addition to carrying on his trade.

W. J. Griffiths, of Griffiths and Adamson, plumbers, 1451 Queen Street West, Toronto, is successfully running an automobile garage next door to his plumbing shop.

The new department opened by the Saskatoon Hardware Co., for plumbing, steam-fitting and the installation of hot water heating systems has proven a great success.

The journeymen plumbers of Guelph are on strike. They have been getting twenty-five cents per hour, and are asking an increase to thirty cents for a nine-hour day.

The Montreal Branch of the Standard Ideal Company, Port Hope, is on the move from 123 Craig Street to more commodious premises at 155 Notre Dame Street West.

H. Anderson, who has carried on a large tinsmithing and plumbing business at Regina for some years, is leaving to develop his property in the vicinity of Gravelbourg, south of Mortlach, Sask.

George Trudell, vice-president of the Empire Brass Mfg. Co., London, has sold his interest in that concern, and expects to go to Detroit to go into the business of manufacturing automobile supplies.

The Dominion Steam Heating Co., Toronto, have renewed their request to have a by-law submitted to the ratepayers on the question of granting a franchise to the company for laying steam pipes in the Rosedale district.

James Mackie has been engaged by the Lennox Hardware Co., Winnipeg, to manage the plumbing and steamfitting end of their business. At present he has men engaged on two large apartment blocks and several houses.

Chas. Simms, foreman of the brass shop of the Jas. Robertson Co.'s plant at Toronto, died on May 8, after an illness of only one week. Mr. Simms was with the Jas. Robertson Co. for thirteen years. He was born in Toronto in 1852. His widow, one son and four daughters survive.

The Halifax journeymen plumbers' strike is over, and they have returned to work. Committees of the master plumbers and journeymen met last week and agreed upon an increase of five cents per hour, or from $13.50 to $16.20 per week. The strike commenced on May 1, the men asking an increase from 25c to 30c an hour.

MUELLER WALL HANGER.

The H. Mueller Mfg. Co., Decatur, Ill., makers of water, plumbing and gas brass goods, are sending to the plumbing trade a wall hanger in colors calling attention to some of their products. In the centre is a picture showing the interior of a bathroom with two plumbers preparing for work. The elder one is holding up a faucet for the inspection of the younger man, and is also giving some fatherly advice about the use of Mueller goods. Around the picture are groupings of cuts illustrating Mueller's patented taps, connections, pipes and joints, all of which are unconditionally guaranteed.

FREE PLUMBING FOR POOR.

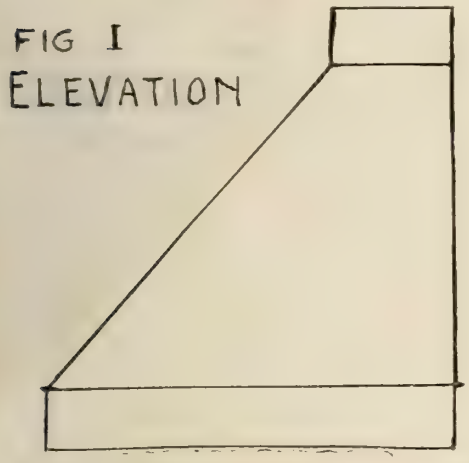
A city plumbing department which shall be devoted especially to placing plumbing and sanitary improvements at cost in the homes of the poor in Milwaukee, is one of the first fruits of the new socialist municipal council. Mayor Seidel is also looking for a health commissioner for Milwaukee, a man of ability, willing to take the job with a salary of $6,000 a year and who will devote his time exclusively to the office.

Cutting Patterns in the Tin Shop

Readers of Plumber and Steamfitter are Requested to Make Use of this Department—Questions Regarding Patterns Will be Answered by Experts—Discussion is Also Invited on Any Matter pertaining to the Tin Shop.

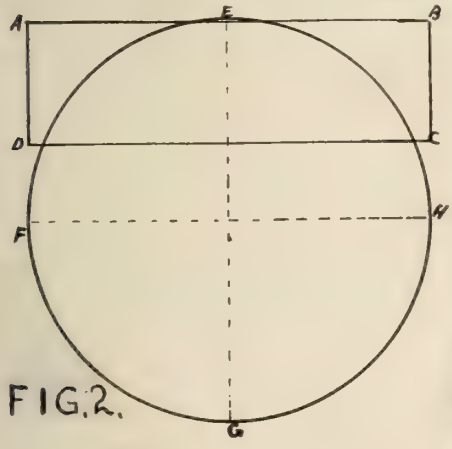
PATTERN FOR BULLHEAD.

Illustrating a bullhead or transition round base with a rectangular top, to be in two pieces. Fig. 1 is a side view of bullhead or transition piece, and Fig. 2 shows the bottom and top, the top to



one side leaving the back straight, while Fig. 3 is the plan showing the method of obtaining triangles, E F G H represent the bottom and A D C B represent the top.

As the pattern is to be in two pieces it is only necessary to use half the plan. First divide the circle or bottom, into quarters. Then divide the two quarters represented by E H G into equal divisions and from the points in the sec-

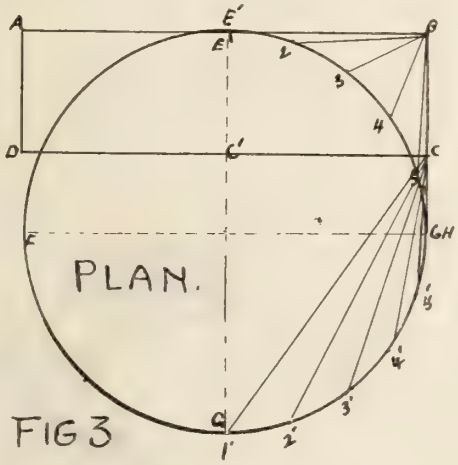


tion E H draw lines to the corner of top represented by B in Fig. 3 and from the divisions in section H G draw lines to the corner of top represented by C (Fig. 3). It will be necessary to construct the two diagrams of triangles one for each corner shown in Fig 3 so as to obtain the true length of each line.

Lay off the line R J (Fig. 4) equal to the straight height of article (this is made to suit the work to be used on). From the point J and at right angles to R J set off the length of lines in the section E to H making J 1 equal to B 1, J 2 equal to B 2, etc. From the points this established in J W (Fig. 4 draw lines to R as shown.

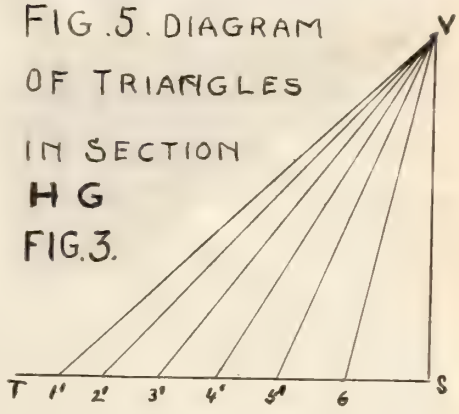
To obtain the triangles for the section H G, proceed to draw lines same as in Fig. 4. Make V S same height as R J (Fig. 4), draw S T at right angles to V S and on the line S T set off the length of lines in section H G making S 1^1 equal to C 1^1, S 2^1 equal to C 2^1, etc., and from the points thus established in S T (Fig. 5) draw lines to V as shown.

To obtain pattern lay off line 1 E^1 (Fig. 6) from point E^1 and at right angles to 1 E^1 draw line E^1 B equal in length to E^1 B of plan (Fig. 3) which is



the same half the length of long side of top. Set the dividers to R 1 (Fig. 4) and with B of pattern as centre strike arc cutting the line E^1 1. Then draw line from where they cross to B (Fig. 6) with B as centre and R 2 (Fig. 4) as radius, describe an arc with the dividers set to the same space used in stepping off the plan.

With 1 of pattern as centre strike a small arc intersecting at 2 with arc previously drawn. With B (Fig. 6) as centre and R 3 (Fig. 4) as radius describe an arc, and with the dividers set to same space used in stepping off the

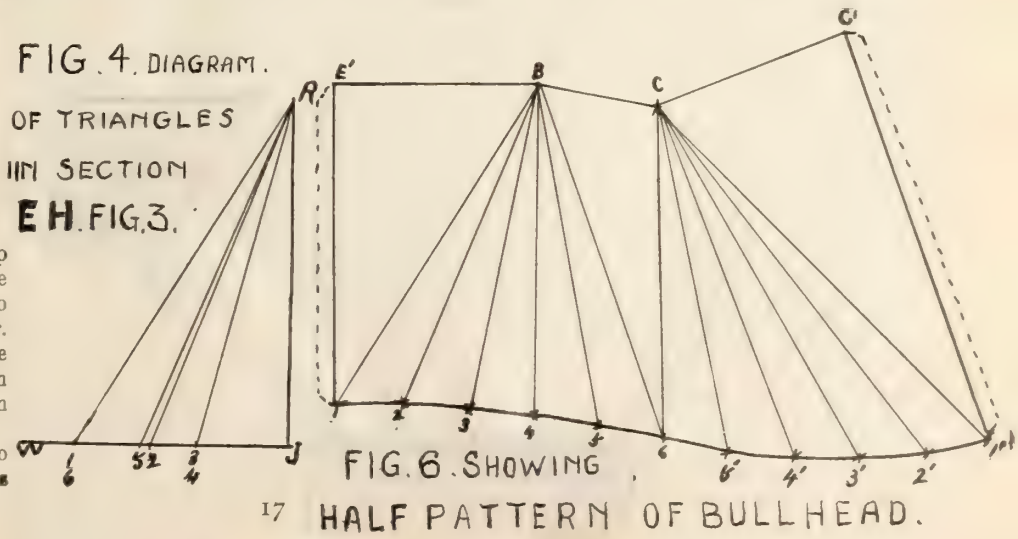


plan strike small arc intersecting at 3 of pattern. Proceed in the same way to lay off the lines 4, 5 and 6. Then to obtain the point C of pattern set the dividers to B C of plan (Fig. 3) with B of pattern as centre and B C of plan as radius, describe an arc, and with V 6 (Fig. 5) as radius and 6 of pattern as centre strike an arc intersecting with the arc already drawn. This will give the point C of pattern. With C of pattern as centre and V 5 (Fig. 5) as radius describe an arc and with the dividers set to same space used in stepping off plan using 6 of pattern as centre strike small arc intersecting at 5^1. The remaining lines 4^1, 3^1, 2^1 and 1^1 are established in the same way as the proceeding one.

To complete the pattern set the dividers to C^1 C of plan and with C of pattern as centre strike a small arc and from 1^1 of pattern as centre and the slant height of article (Fig. 1) as radius strike an arc intersecting at C^1. Then lines traced through the points thus obtained will give the pattern required.

All edges to be allowed.

W. J. REEVES.



New Buildings, Water and Sewerage Systems

Opportunities Offered by Municipalities and Private Enterprise for New Plumbing, Heating, Ventilating or Sanitary Systems—Work Being Undertaken in Every Section of the Dominion.

Municipal Undertakings.

Cumberland, B.C., is calling for tenders for the instalation of a sewerage system

Tenders will be received until May 20 for extension of sewers at Fort Frances, Ont.

The Welland council are considering the construction of a trunk sewer to cost $5,000.

The contract for sewer pipe at Winnipeg was awarded to Thos. Jackson & Son, at $6,755.50.

Chipman & Powers, Toronto, have been asked to outline plans for waterworks at Lake River, Alta.

Fernie, B.C., has decided to raise $1,900 for water extensions, $2,700 for surface drainage and $41,000 for sewers.

A by-law to raise $27,000 will be submitted shortly for the instalation of a waterworks system at Chippewa, Ont.

A new six-million-gallon turbine pump costing $30,000 will be among the items in the $375,000 bill for water extensions at Montreal.

W. Beverley Robinson, Montreal, was awarded the contract for cast iron pipe required for waterworks extensions at Winnipeg, at $18,131.11.

The Campbellton, N.B., council let the contract for bar lead, lead pipe, wrought iron pipe and fittings, and brass goods to the Jas. Robertson Co., St. John.

H. G. McVean, Moose Jaw, Sask., has been awarded the contract for laying 7,000 lineal feet of sewer pipe, including manholes, catch basins, etc.

Among the improvements arranged for the coming summer at Halifax, N.S., are water service extensions on Morris St. and sewer work in the west end.

J. D. Whitmore, formerly city engineer, of Moose Jaw, with T. A. Murray, is planning a new waterworks and sewerage system for Swift Current, Sask.

Charles Moore, P.L.S., has been appointed by the B. C. Government to carry on the survey for the proposed subway construction and sewerage system at Creston, B.C.

Victoria's purchasing agent is calling for tenders for iron lamp standards; also tenders for the supply and erection of a sewerage pump, an electric motor and automatic starter.

The Lethbridge council have adopted the following estimate of expenditure on anticipated works: Sewer main extensions, $40,000; water main extensions, $67,000; sewer outlet, $42,000.

Tenders addressed to J. H. Atwood, Bridgeburg, Ont., will be received until May 16 for material and construction of about 10,000 lineal feet of vitrified pipe sewers; also septic tanks of 15,000 cubic feet capacity.

Messrs. Lynch, McKay and Douglas, Prince Rupert, B.C., the citizens' committee, have been authorized to go on with the $4,000 sewer extension on Sixth Avenue and the $13,000 waterworks extension in sections 1, 6 and 7.

The Vancouver water committee awarded the contract for eighty tons of special castings at three cents per pound to the Vancouver Engineering Works. The Terminal City Ironworks also were awarded the contract for 25 Ludlow hydrants at $82 each.

At a special meeting of Rodney, Ont., council, a by-law was provisionally passed granting a franchise to the Rondeau Gas & Oil Co., to lay pipes through the village and supply gas for heating and illuminating purposes. Voting on the by-law takes place on May 16.

Public Buildings.

Fernie, B.C., will raise $6,000 for new schools.

A new public school will be erected at Gretna, Man.

An emergency hospital is to be erected at Stewart, B.C.

St. Catharines will erect a modern hospital, to cost $50,000.

Andrew Carnegie has offered Owen Sound $25,000 for a free library.

The Syrian Orthodox church will erect an edifice at Montreal, to cost $8,300.

There is a movement on foot to erect a modern theatre at Prince Albert, Sask.

It is probable that Mechanicsville (Ottawa) will have a new public school this fall.

J. H. Trembly has submitted a tender of $12,000 for a Ruthenian school at Winnipeg.

A permit has been issued to John Morley for an extension of St. Joseph's school, at Sydney.

The by-law granting $10,000 towards the erection of the hospital at Smith's Falls, was carried.

A $15,000 by-law may be submitted for an extension to the Collegiate Institute at Niagara Falls.

Tenders are wanted at once for erection and completion of St. Peter's church, Erindale, Ont.

Competitive preliminary plans for the proposed library at Fort William will be received until May 16.

During the coming summer $100,000 is to be spent in repairing and fireproofing Toronto schools.

The school trustees of Victoria have selected a site for a new high school, to be built in the near future.

The Roman Catholics of Midland will erect a new and much larger church this summer on the present site.

F. Neil Brodie, architect, St. John, is preparing plans for a new brick and stone school building for Moncton.

The Arnprior, Ont., school board have decided to improve and add to the high school, at an expenditure of $14,000.

The authorities of the French Maternity Hospital, Montreal, expect shortly to erect a large new hospital building.

The contract for a new Methodist Sunday school building at Orillia, has been awarded to Wm. Switzer, at $15,700.

Tenders will be called shortly for the new wing of Osgoode Hall, Toronto, for which the Provincial House voted $50,000.

Smith Bros. & Wilson, contractors, Regina, were awarded the contract for the Saskatchewan university, at $600,000.

A permit for the erection of a three-storey addition to the Kimberley Ave. school, Toronto, to cost $35,000, has been issued.

The congregation of Christ church, (Anglican) Fernie, B.C., are contemplating erecting a handsome edifice in the near future.

Munro & Mead, the Hamilton and Brantford architects, have been awarded the contract for the new $30,000 high school at Dunville, Ont.

The Saskatoon council are asking for plans of a new hospital, the cost of which will be covered by a by-law to be submitted to the ratepayers.

Plans are being prepared by the Dominion Public Works Department for the erection of a new post office in Fairville, St. John county, N.B. The building will cost about $20,000.

Instructions have been issued by the Department of Public Works for the preparation of plans for the new Government offices at Kaslo, B.C., it being the intention of the Government to invite tenders for this structure at an early date, which will cost $20,000.

General Buildings.

A new $10,000 hotel will be erected at Fonthill, Ont.

Citizens of Calgary will build a half-a-million-dollar hotel.

Thos. Kelly & Son will erect a $70,000 office building at Winnipeg.

H. J. Scott will build a business block at Victoria, to cost $30,000.

J. C. Considine will erect a ten-storey business block at Vancouver.

The John Deere Plow Co. are erecting a $100,000 block at Saskatoon.

The Salvation Army will build new barracks at Prince Rupert, B.C.

A. A. Dick will build a big temperance hotel at Calgary, to cost $100,000.

A Masonic building will be erected at New Westminster, to cost $20,000.

The Dominion Realty Co., Victoria, will erect a business block to cost $7,000.

The Bank of British North America will erect a building at Prince Rupert, B.C.

Finch & Finch, men's furnishings firm, will erect a store at Victoria, to cost $18,000.

H. B. Labelle & Co. will erect an eight-storey building at Montreal, to cost $105,000.

Revillion Bros., Nepigon, will erect a business block at Fort William, to cost $15,000.

A permit was issued to J. Moxam, Winnipeg, for an apartment block, to cost $90,000.

A site has been purchased as a location for the new Masonic hall in the west end of Toronto.

A business block to cost $20,000 will be erected at Saskatoon by Drs. H. A. and P. D. Stewart.

The C.P.R. will erect a cold storage plant, wharves, etc., at Summerland, B. C., to cost $38,000.

Simoneau & Dion have been awarded the contract for the erection of the Mitchell block, at Sherbrooke, Que.

M. H. Braden was awarded the contract for a $25,000 garage for the Northern Automobile Co., Fort William.

W. E. Noffke, has completed plans for the three-storey block at Ottawa, to cost $100,000, to be erected for K. Farah.

The Northern Produce Co. are advertising for tenders for the erection of a $50,000 abattoir at Prince Albert, Sask.

Amos Shunk has obtained a permit for the erection of a three-storey apartment house at Toronto, to cost $20,000.

H. L. Timmins and N. A. Timmins will erect a building at Montreal containing four stores and a factory, costing $62,000.

The old opera house block in Galt, recently gutted by fire, is to be converted into a 14-suite apartment houses, cost $25,000.

The Bank of Montreal have purchased 2,000 feet of land at Quebec, and will in the near future erect a modern office building.

Plans are being prepared by Carl Wirth for the construction of a $60,000 business block for Jas. Murphy, at Fort William.

The following building permits were issued recently at Winnipeg: Wm. McLean, five dwellings, $12,500; J. Morris, house, $7,200.

May promises to be a particularly good building month at London. Thirty-six permits have been issued, amounting in the first week to $30,000.

The Quebec commissioners have awarded the contract for the erection of a storehouse, containing police station, to Jinchereau & Lamonde, contractors.

It is stated that the Bank of British North America and the Bank of Toronto have purchased property at Winnipeg, with the intention of building.

The following permits have been issued recently at Regina: Robt. Armour, block, $28,000; A. M. Fraser, residence, $6,000; Alex. Mowat, business block, $20,000; P. McAra, business block, $20,000.

Among the new buildings to be constructed at Victoria in the near future are: A $30,000 store and office building, for which H. S. Griffiths, architect, has the plans in hand. The Union Club will also erect new quarters.

Recent building permits granted at Port Arthur include: W. B. Leece, business block, $14,000; H. S. Goodier, house, $5,000; Shumiah Lodge, temple, $25,000; W. G. O'Leary, house, $6,000; W. R. Telfer, house, $6,200.

Building for the present month at Victoria has been very brisk, among the the larger permits granted being: Canadian Bank of Commerce, $7,000 for branch office; E. M. Johnson, $10,000 for a brick building for store and office; and the Westholme Lumber Co., $40,000 for a business block.

The S. M. Brookfield Co., of Halifax, have been awarded the contract for the erection of the new Y.M.C.A. building in Halifax. The figures have not been given out, but it is understood that the price is in the vicinity of $150,000. The contract is the largest that has been awarded in Halifax for some time.

Recent building permits at Hamilton include: J. Bryers, dwelling, $4,000; J. Bryers, dwelling, $5,000; Rastrick & Sons, dwellings, $4,500; S. McPhie, dwelling, $5,000; Stewart & Witton, brick addition to Nurses' Home, $18,000; A. W. Peene, store, $5,000; S. McPhie, registry office building, $30,000.

Recent building permits at Vancouver include: C. Farmer, five dwellings, $7,500; Mr. White, $6,250; H. K. Edwards, three houses, $7,200; George Adams, $12,000; T. V. Scudamore, $11,500; Peter Tardiff, brick block, $25,000; F. Baylis, store and apartments, $8,000; T. V. Scudamore, store and apartments, $11,500; the British Columbia Bedding and Upholstery Co., business block, $25,000; S. S. Bond, apartments, $23,000.

The following buildings will be erected at Winnipeg: Warehouse and additions to Western Flour Mills, $260,000; warehouse for Berna Taxicab Co., $40,000; business block for R. R. Pattinson, $70,000; pavilion and garage for automobile club at Stonewall, $25,000; store and apartment block for A. C. Gardiner, $58,000; Purcer Bros., five dwellings, $21,000; F. D. Burriss, two houses, $5,000; W. A. Cameron, dwelling, $4,000; Dunn & Wallace, dwelling, $7,000.

The following are recent building permits granted at Montreal:—A. Bleau, three dwellings, $6,000; A. Paquin, house, $8,000; J. A. E. Plante, two houses, $7,000; Boileau & DeMontier, six houses, $24,000; L. Hamslen, two houses, $6,000; Mrs. J. E. Cormier, two houses, $14,000; C. Johnson, two houses, $5,000; Lamarre Freres, Knox Street, three houses, $8,500; Commercial Ecole d'Hochelaga, one educational building, $48,000; Z. & J. St. Pierre, one house, $16,000; A. J. Darling, one house, $8,000; C. J. McCuaig, one house, $30,000; Mrs. D. W. Ogilvie, one house, $12,000; Ideal Savings & Loan Co., two houses, $4.000; J. S. C. Martin, four houses, $12,000; Institute des Petites Filles de St. Joseph, $100,000.

ALWAYS GIVE A SQUARE DEAL.

Always give your customer a square deal—it pays. If you engage in an argument over a disputed bill, be gentlemanly—let the other fellow get mad. Ten chances to one he will feel ashamed of himself afterwards, and settle your way. Being liberal doesn't necessarily mean that you must knuckle under or concede all disputed points; but if you show a disposition to do the right thing, the average man will meet you on your own ground.

GAS IN HOT WATER PIPES.

C. Westergard, Puyallup, Wash., writing in the Scientific American, says:

"A short time ago I noticed a phenomenon which I believe will be of interest to many.

"The main building of our experiment station here is heated with hot water. It has been one of my duties to see that the system is working properly, and in this connection I have had to open the air vents on the radiators frequently. I was surprised to find that the radiators on the top floor (a two-story building) always seemed to have air in them, in spite of the fact that the system was fully charged and very little or no new water admitted. I began to suspect that this condition had to be accounted for in some other way. Was there not a possibility that this gas could be hydrogen? For what other gas would be likely to form under those conditions, unless it be a trace of carbon monoxide? At any rate, when I applied a match the gas lighted with the familiar pop of hydrogen, and burned with its characteristic almost colorless flame. Assuming that the gas is hydrogen (I have no means of testing it) the question suggests itself: Is this a case of oxidation of the iron setting free hydrogen? Is it an electrolytic effect, caused by galvanic couples of either carbon and iron or iron and the brass connections in the system? Or is the gas methane? It may be noted further that the gas does not seem to collect in the radiators in the lower floor to a great extent, if any. Of course, this may be due to the gas being dissolved under the increased static pressure. The static pressure on the radiators of the top floor is not over ten feet of water at the present time. The water is of exceptional purity, being supplied by a spring. The fact, however, that small quantities of water have to be added occasionally to replace the leaks in the system might suggest the presence of methane. That question can only be settled by chemical analysis.

PLUMBING AND HEATING MARKETS

MONTREAL.

May 14.—Great business is being done in soil pipe, steamfittings, boilers, etc. Supply houses are working at hard pressure, and there is no cessation to the flow of orders. As one house said: "If we get this now what will things be like during the fall, when building is expected to be much heavier?" As a rule, at this time manufacturers, while busy, have time to add to their stocks, but most of the plants have all they can do to supply the present demand.

A feature of the trade is the general character of the demand. Not only locally, but from all parts of the country, orders are coming in freely, and it is apparent that plumbers generally are doing well.

The markets are on the firm side. Prospects locally are very good, and plumbers report that trade is getting heavier every day. The work is not as evenly distributed as it could be, but that is something which cannot be helped.

Soil Pipe—The demand is exceedingly heavy. Orders are pouring in from all parts of the country, and manufacturers report that the plants are only keeping up to the pressure. No stocks are being accumulated, although additions in some cases have been made to the plants. The eastern trade is excellent. We quote light 60 off, heavy 70 and 10.

Lead Pipe—The improvement in lead pipe continues, and heavy trade is reported. There is no lack of pipe at present, but if the demand continues at present rate, shipping may in time become delayed. We quote: Pipe and waste at 25 off; traps and bends, 50; calking lead, 5c per lb.

Solder—Solder is showing seasonable activity, and orders are heavier than they were. We continue to quote: Half and half, 20c; wiping 18½c.

Iron Pipe—The demand is extremely good, and with the boat service now in full swing heavy consignments are being dispatched by water. The local trade has greatly improved. We quote: ¼-in. black, 63; galvanized, 48; ⅜-in. black, 59; galvanized, 44; ½-in. black, 69; galvanized, 59; ⅜ to 4-in. black, 71½; galvanized, 60½.

Radiators and Boilers—Coming events cast their shadows before, and the present demand for radiators and boilers indicates the pressure that will exist later on. Plants are trying to work up stocks but this is difficult with the movement now going on. We quote: Steam boilers, 60 and 5; hot water boilers, 50 and 10; wall and hot water radiators, 50 and 7½; steam radiators, 50 and 7½ per cent.

Enamelware—There is an excellent demand for enamelware, especially for the better grade stuff. Manufacturing plants are full up with orders, while jobbers are shipping every day. The local trade is reported as being very heavy.

Scrap Market—The scrap market shows more life. Copper lines are weaker in sympathy with the crude metal, but no changes are reported. Heavy copper wire, 11½c; light copper bottoms, 10c; heavy red brass, 10c; heavy yellow brass, 8c; light brass, 6¼c; tea lead, 2½c; heavy lead, 2¾c; scrap zinc, 3c; cast iron, $16.

Metals—The markets have all been weaker in sympathy with London and New York. Copper is down ½c. Tin, 35c; copper, 13½c; imported lead, $3.75; domestic lead, $3.60.

TORONTO.

May 14.—The situation in the plumbing trade has not changed since last issue. The good and steady business then prevailing continues and the movement of goods is quite satisfactory.

With the exception of lead pipe, which is easier by five points, all plumbing goods are at the quotations formerly reported. Great quantities of soil pipe have been sold this spring, and a second big season is on in enamelware. The brass trade is exceedingly busy, working into the night being necessary to get out the orders. Scrap metals have declined owing to last week's break in the metal market. The extra 5 per cent. which was allowed on sales of enamelware going to the northern part of the province has been cut out, and the one quotation rules all over Ontario.

Enamelware.—This line of goods is experiencing bumper business again. Just after the turn of the year outside points began ordering for stocking up. All spring steady business has prevailed, and since the opening of the building season the demand for enamelware has been particularly active. Prices hold firm at unchanged figures. The recently-inaugurated price list makes the one quotation govern all orders in Ontario from Port Arthur to Kingston. Cobalt and other sections of the province have up to now been granted an extra 5 per cent. This has now ceased. The new list is working well. The majority of orders call for baths and closet combinations.

Soil Pipe.—This spring has seen a big demand for soil pipe, and even yet large quantities are going out on orders. Stocks are larger than for many recent years. Prices are unchanged. Light pipe is 60 and 10; medium and heavy 70 and 10; and 7 and 8 inch pipe, 50 per cent. Fittings are 70 and 10 per cent.

Iron Pipe and Fittings.—Like soil pipe, iron pipe has been heavy in orders all spring, and present demand continues good. The market is firm at the old quotations. Malleable fittings discounts range from 37½ to 40 per cent., and cast iron fittings from 60 to 65 per cent. Standard bushings are 70 and malleable 65 per cent. Nipples are 75 and 10; headers, 60; and flanged and malleable-lipped unions, 65 per cent. Galvanized pipe (1-inch) is $6.35 per hundred feet, and black pipe (same size) is $4.70.

Lead Pipe.—The movement of lead pipe is fair at present, but owing to the easy tendency of pig lead a week ago lead pipe has declined 5 per cent., the present discount being 30 p.c. Traps and bends remain at 50 p.c. Calking lead, too, is unchanged, but the firmness noted at last issue did not amount to anything. The price ranges from 4½c to 4¾c.

Solder.—Sales are splendid just now and the summer is expected to be a good one for orders. Stocks are large. Prices are unchanged. Quotations run from 18½c to 20c a pound. Wiping solder is at 17c to 18½c.

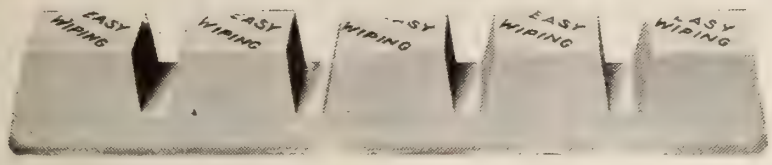
Brass Goods.—Manufacturers state they are exceptionally busy on orders, and some factories are working into the night every other day. Steam goods are wanted and quite a bit of locomotive and marine contracts are awaiting to be filled. Quotations are still at the old figures. Fuller work is 70 per cent. Compression work, high grade, is 60; medium, 65; and standard, 70 per cent.

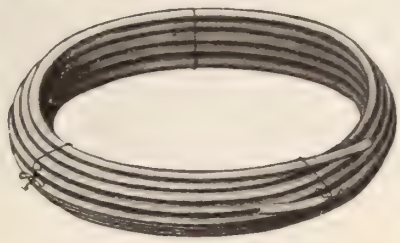
Boilers and Radiators.—The call for heating goods is increasing as the season advances. All the houses report a first-class demand. Quotations are unchanged. Hot water boilers and radiators are 50 and 10, and steam radiators are 50, 10 and 2½ per cent.

Metals.—Tin has advanced ½c and is now at 35½c; copper is yet at 14c; lead, $3.75 (dom.), and $3.85 (imp.). There was a big slump since last issue, but the new metals have recovered themselves. Not so the old metals, which are decidedly easy and lower. Old lead, 2½; zinc, 3½c; copper, 10c; old iron, about 50c a hundred.

The following building permits were granted recently at Montreal: $24,000, A. McLean, two semi-detached cottages; $16,000, John Black, two semi-detached cottages; $12,000, C. Tareton, two cottages; $33,000, Alex Saurette, six cottages, and $16,000, Donald Munro, two cottages.

PLUMBERS





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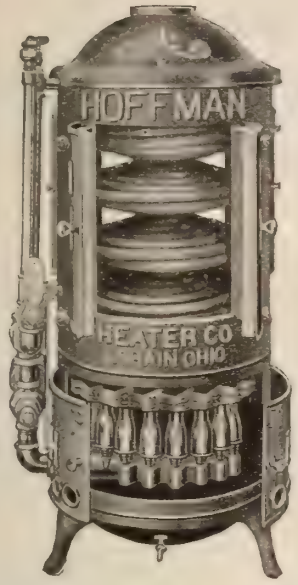

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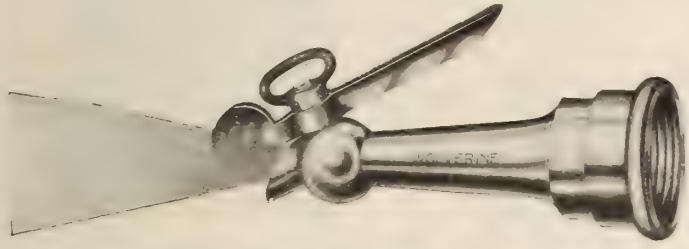

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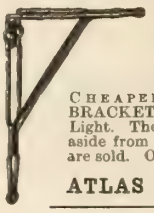

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Equipped With Universal Chuck

No. 6, threading ¼, ⅜, ½, ¾ in., complete

Number 25A "Beaver" cuts 1-in., 1¼-in., 1½-in., 2-in. pipe. One boy can successfully operate this tool.

It is our old No. 2 greatly improved, threading from 1 to 2-inch pipe without changing dies. It has a new centering device for fastening the stock to the four sizes of pipe. Does away with all bushings. The rear opening is large enough to take in a 2-inch coupling for threading short nipples. The parts subject to wear are detachable and may be replaced at slight cost.

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To prove our claim that "Beaver" Die Stocks are the *cheapest*, *most accurate* and *fastest Pipe-Threading Tools* on the market, we will send one on 30 days' free trial. If it does not give you better, quicker service than any Die Stock you ever saw before—send it back at our expense. This is a genuine offer—it costs you nothing to investigate.

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House-Heating Apparatus

was many years in coming, and now that it is here in the

"SOVEREIGN" BOILER

Many still cling to the old hot air system under the delusion that an arrangement of pipes and radiators is too expensive.

Undeceive them by quoting on a complete **"SOVEREIGN"** equipment.

Such an instalment is an absolute guarantee of the maintenance of any desired temperature throughout the house, no matter what the weather may be outside.

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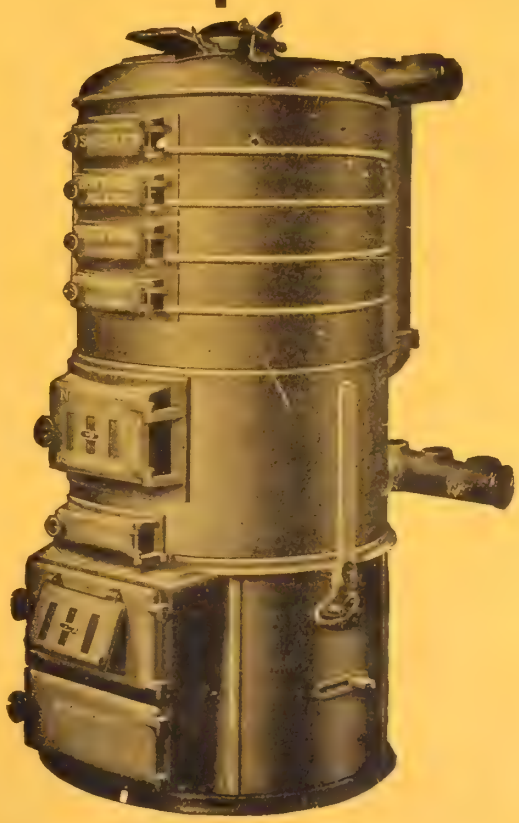

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Plate F
199

The Standard Ideal Company Ltd.

Dimensions Lavatory 18 x 21" Oval Bowl 11" x 14" Back 8"

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We are also manufacturers of full lines of Bath Tubs, Shower Baths, Lavatories, Sinks, Laundry Trays, Wash Sinks, Range Closets, and Urinals, etc., etc.

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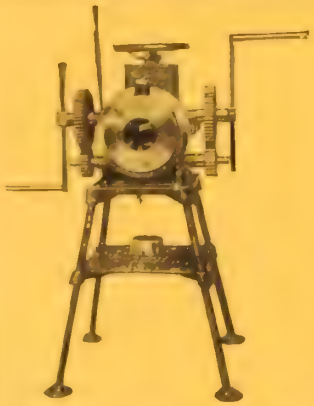

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completely covers the needs of the plumbing and heating contractor in pipe threading.

Its usefulness in this field is of the widest, and the returns from the money invested will soon exceed the original amount.

Let us tell you just what the Loew Victor will do for you

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Vol. IV, No. 5 (New Series). Publication Office : TORONTO, JUNE 1, 1910. Old Series, Vol. XXII. No. 11

Architects, Builders or Steamfitters?

Which one of these three classes has the most influence in selecting the make of boilers, radiators, soil pipe, brass goods, enamelled ware and other goods installed by plumbers and fitters in any new houses which are being built?

A prominent steamfitter in Canada stated recently that two years ago he had handled one make of boilers and installed them during 1908, to the exclusion of all other lines. He had some trouble with this manufacturer and in 1909 decided to recommend another make of boilers, with the result that during the whole season of 1909 only two boilers of the kind he had handled exclusively the preceding year were installed by him.

With two exceptions he had switched every order.

This proves conclusively that the plumber and steamfitter has sufficient influence in the majority of cases to instal whatever make of goods he thinks best. This is as it should be, for when a plumber or fitter undertakes a heating job, or any other work, he takes the responsibility for it giving satisfaction, and builders and owners will usually, therefore, give him a good deal of latitude in the selection of the various brands.

The most economical method for manufacturers and jobbers to reach the plumbing and steamfitting trade throughout Canada and acquaint them with the merits of their goods and the facilities they have for supplying their wants promptly is through the advertising columns of PLUMBER AND STEAMFITTER.

For full information regarding rates write.

Plumber and Steamfitter

and Sanitary Engineer

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Cast Iron Enamel Ware

Famed for its Smoothness, Colour and Wear

This Cut Illustrates Our

Beaver Brand Roll Rim Sink

This is one of our leading and best known lines, which has given satisfaction throughout the Dominion. Our new and up-to-date plant is unrivalled for the production of Bath Tubs, Slop Sinks, Kitchen Sinks, Laundry Tubs, Lavatories, Closets, etc. Customers can rely on having their orders promptly filled. Every article of "BEAVER BRAND" manufacture is guaranteed.

Amherst Foundry Co., Ltd., Amherst, N.S.

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MARITIME PROVINCES — All Jobbing Houses

MONTREAL, P.Q. — All Jobbing Houses

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Peerless WATER SERVICE SYSTEMS

There's no element of risk to you in installing "Peerless" Water Service Systems

We ship you the equipment complete. You install it and take your profit---we assume all the responsibility.

Selling "Peerless" Systems is the best proposition ever placed before the plumbing trade. They are in demand; and progressive architects are specifying them everywhere because of their unique simplicity and absolute reliability.

Better become known as the leading "Peerless" System man in your locality.
It pays in greater profits and increased business.

SIT DOWN NOW AND WRITE US FOR THE FULL PARTICULARS.

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Quality THE CROWN Talks !

When you see the "Crown" Trade Mark on *laundry goods*, you will know that you are dealing with an article in which QUALITY is the pre-eminent feature. We spare no pains in the selection of materials, skill in making and care in finishing "CROWN" goods and the result is an article second to none on the market

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on your heating work, and your valve troubles are over

We charge the price and furnish the reliable goods

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Look for Our Name "KERR" on All Genuine KERR VALVES

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"VULCAN BIJAWS"

The climax of 30 years' manufacturing and selling experience in Chain Pipe Tools.

BECAUSE in the reversible jaws—readily changed when teeth first in use wear—you get the service of two tools at the price of one.

BECAUSE of the fastening of jaws to handle with two bolts the full strength of tool is provided for in one, and the other may be used as an emergency bolt, and repairs may be made while at work in case of accidents.

BECAUSE the bite of teeth is a distributed pressure and does not tend to crush pipe; no pipe-tearing or jaw-wearing strain on "straight-cut" teeth

BECAUSE every part of tool is fully guaranteed and interchangeable. No tools similarly made ever approached the "Vulcan" class of Chain Pipe Tools in strength or utility.

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Flat band fittings being more popular to some than the round, we have decided to prepare a full line of flat band Cast Iron patterns, a feature of which will be that the first thread will be removed. This will prevent burring. Each fitting will be threaded in one operation, insuring a perfect alignment.

We carry a full stock of round band Cast Iron Fittings and can fill large specifications promptly.

When ordering, be sure to specify whether round or flat band is desired.

It will be some time before we can expect to have a complete line of the flat bands. We are, however, preparing the larger sizes first.

Let us have a trial order and advise us what you think of the strength-giving curves of our new designs.

Yours truly,

Fittings Limited

Oshawa, Ont. *H. T. Carswell*

June, 1910 *Secy.-Treas.*

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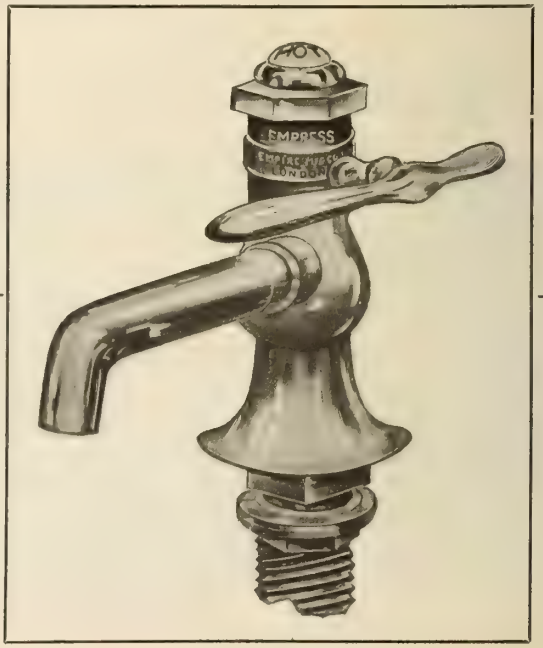
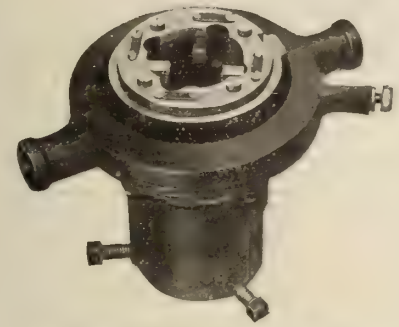
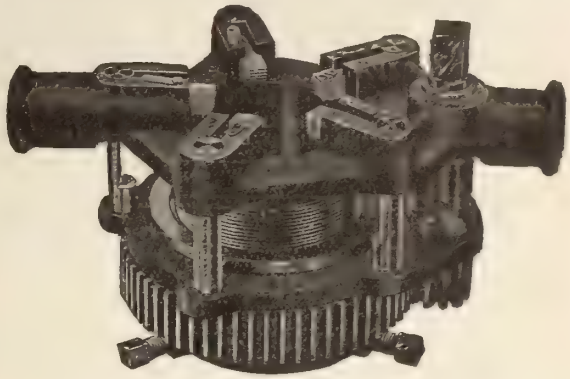


"Toledo & Jardine"— "The Threaders that Thread"
"Vosper Pipe Cutters"— "The Cutters that Cut"
"Positive Chain Tongs"— "The Tongs that Grip"

PIPE TOOLS



No. 11R "JARDINE"
Capacity 1 in. to 2 in. Right and Left, Combination Ratchet Hand Stock.



No. 2 "TOLEDO"
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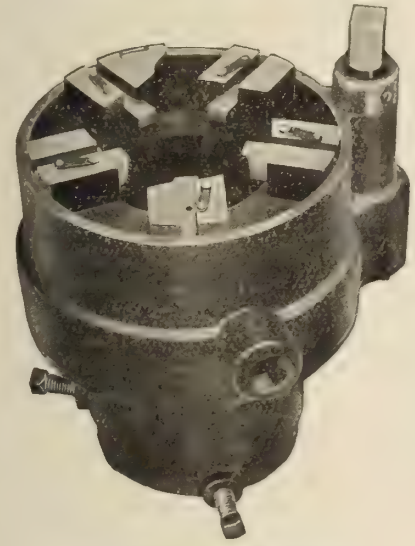

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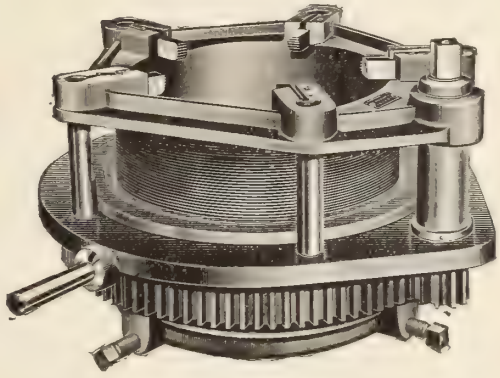

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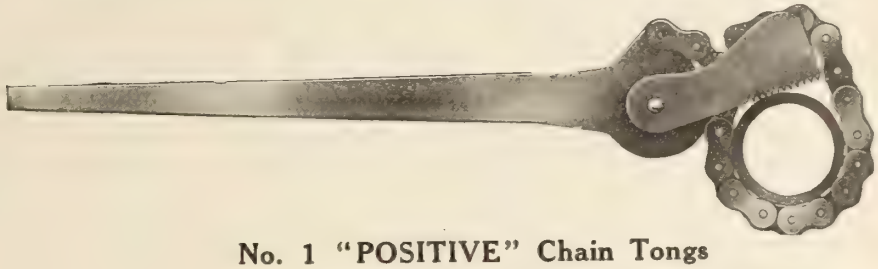

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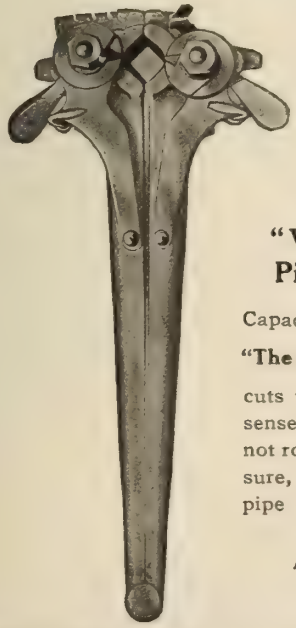
Capacity ¾ in. to 2½ in.

"POSITIVE" Tongs Grip both Pipe and Fittings. The Jaw drops with its own weight, bringing into play a ratchet motion. The Tongs for close work. The Tongs you pull down on as well as pulling up. Grips Galvanized Pipe and Fittings the same as Black. The Best Tongs yet made. Try them and note their superiority.



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Capacity ⅛ in. to 2 in.

"The Cutter that Cuts"

cuts the pipe in every sense of the word, does not roll it under pressure, no more split pipe or reaming.

For Sale by all Jobbers.

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Plumber and Steamfitter

and Sanitary Engineer of Canada

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Circulating amongst Plumbers, Steam, Hot Water and Gas Fitters, Sanitary Inspectors, Heating and Ventilating Engineers, City Engineers, Boards of Health, Architects, etc.

TORONTO JUNE 1, 1910

WILL THERE BE A MERGER?

In spite of all the talk of the proposed merger, including the various Canadian manufacturers of boilers and radiators, price-cutting is still being indulged in, and the past week or two has seen some remarkably low quotations offered the trade in Toronto and Montreal.

At a recent meeting in Toronto one manufacturer told the rest they were acting like a lot of schoolboys, and warned them that unless they got down to business he would commence slashing prices.

The situation at present is critical. The cutting in prices may bring the merger proposition to a head, and result in a strong selling arrangement, in which prices will be firmly held, or, what seems more likely, the cutting may develop additional obstacles for the merger promoters to overcome.

VALUE OF COURTESY IN BUSINESS.

Courtesy costs nothing, and yet it is one of the strongest levers in building up a successful business. Question any of our leading captains of industry, and it will be found that they place the utmost value upon courtesy as being one of the best bringers of orders. In no case is the fact more apparent than in the plumbing trade. Here the workman is often brought as closely in touch with his customer as the hardwareman or grocer. More so, because his employment takes him right into the house. It is, therefore, essential that he should practice the utmost courtesy to everyone so that no discordant note shall follow the transaction. Every plumber who makes a good impression not only makes himself solid, but paves the way for other jobs. Sentiment exerts a large influence in the placing of business, and a reputation for politeness carries more weight in the best class of trade than that of cut prices.

This is a little word of warning to the young man who are the master plumbers of the future—it may be that older heads can also read, mark, learn, and inwardly digest. Take the trouble to make yourself solid with every customer, not only for your own sake, but for your employers as well. Do not be courteous only to those who may be regular customers. You never know who is going to place the next biggest order on the books.

The plumber has to live down a lot of odium. The master plumber of to-day is doing his part, and the master plumber of to-morrow must see that he does his part likewise. Why should the plumber be considered a surly, grouchy fellow, to be got out of the house as soon as possible. The average plumber is not like this. But here again we have the faults of a few being foisted upon the many. It is the usual justice of a thoughtless world. The only way to break down that odium is to make the faulty ones fewer, and to bring out into as great a prominence as possible the fact that the plumber is not surly, and is not grouchy, even when he is pestered right in the middle of a delicate job with foolish questions from a member of the household, the landlord, or whoever it may be. The young plumber can do a lot of good in this respect because through thoughtlessness he is more inclined to tread upon people's corns than an older man.

To the young plumber, therefore, we say, go into a customer's house as carefully as if it were your own. Make as little dirt as possible. Do not throw the kit bag down carelessly and place the tools anywhere. Be careful with the grease, and if any member of the household does come round worrying with questions, go out of your way to answer them cheerfully and with interest.

"That is a nice young man of yours, Mr. Plumber. I rather dreaded the little job you have just done for me, but your assistant made no mess at all. and was so obliging." Such an observation as this means dollars and cents to the young plumber, and a satisfied customer to the master. Is not that worth the trouble of being courteous and careful? And if this customer wants something done again, who gets the work, the shop around the corner which is cutting prices, or the one which has done the previous work with satisfaction?

A reputation for courteousness stays with a man. Given the right kind of employer, it means that every opportunity is given him for advancement. He is kept on when other men are laid off, and when the time comes for the journeyman to set up for himself, it can be looked upon as a good asset.

Competition is now so keen that no man can afford to neglect any of the means whereby he can make himself solid. The reputable man has to fight cut prices and shoddy work. He must, therefore, bring into play all the influences at his command, and courtesy is undoubtedly one of his strongest cards. When it is considered that it costs nothing, but the exercise of a little trouble and of a little care, it is more than ever a matter of surprise that there are so many evidences of plumbers, young and old, failing to use such a business getter.

ONE EDITOR'S IMPRESSION.

A new skyscraper in New York will require ten miles of plumbing. It must take nearly all the money in the world to pay for ten miles of plumbing.—Los Angeles Times.

TYPHOID EPIDEMIC TRACED TO PLUMBING.

According to The American Journal of Public Health, the recent Winnipeg outbreak of typhoid can clearly be traced to the surreptitious connecting of the pure water mains with the mains supplied from the river and used for fire purposes. The C. P. R. yards are furnished with both sets of water mains. The river water is utilized for filling locomotive and stationary boilers, and is employed on account of being much softer than the domestic supply. The pipes carrying these two waters ramify extensively throughout the yards and the various buildings within them, and in some places are situated close together. On November 18, after a great many samples had been tested with negative results, water was obtained from a certain drinking tap from which it was possible to collect bacillus coli in every instance. This organism is never found in the domestic supply of Winnipeg, but always is present in Red River water.

The building from which the suspicious samples were obtained was one of the places where the two sets of pipes were close together, and a careful examination revealed that a connection existed between them. The man in charge of the building admitted that he had connected the two early in October in order that should the high pressure supply for any reason fail, an incident that had once occurred owing to a break-down at the pumping station, he would be able to fill his boilers from the domestic mains without loss of time. When the connection between the two systems was found the course of events was very evident. Domestic water is forced through the mains at a pressure of between forty and fifty pounds per square inch, the high pressure river water at anything between 150 and 300 pounds. When these two waters met, the river water forced the other back up its own mains and replaced it there for a considerable distance. Individuals using water from this line of pipe supposedly containing artesian well water were really drinking water from the Red River, into which all the sewage of Winnipeg is discharged. It is to be noted that, with one exception, the affected persons had never been near the house where the connection was made. The existence of this connection was definitely established on November 19, when it was at once abolished. Cases of typhoid continued to arise until November 30, which was the last. A clearer connection of cause and effect could scarcely be established.

TRAVELERS FIGURING JOBS FOR FITTERS.

At the convention of the Pennsylvania Master Plumbers' Association, held a fortnight ago, the subject of travelers figuring jobs for plumbers and fitters was discussed and the following resolution adopted :

"Whereas it has become the practice of boiler and radiator houses to figure radiation and furnish piping plans for heating plants to incompetent and irresponsible pipe fitters, also to furnish lists of radiator sizes and boiler capacities required to owners, much to the injury and detriment of the practical heating men in the trade, and to the business in general. Be it therefore resolved, that we the State Association of Master Plumbers in convention assembled do hereby protest and condemn the above-mentioned practice, and be it further resolved, that a copy of this resolution be sent to each jobbing house in the State."

This subject was referred to in an editorial in the Plumber and Steamfitter of May 1, and is worthy of discussion at the convention of Master Plumbers and Steamfitters to be held in Toronto next August.

OFFICIAL NEWS
N. A. M. P. & S. F. of CANADA

OFFICERS 1909-10

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Chairmen of Committees,—Legislation, H. A. Knox, Ottawa; Sanitary, P. C. Ogilvie, Montreal; Apprenticeship, J. Griffin, Montreal; Essay, E. Russell, London.

Next Convention will be held at Toronto the last week in August, 1910.

TIME NEVER MORE OPPORTUNE.

Editor Association Department, Plumber and Steamfitter,—After the last convention of our association in Montreal I looked forward to some real progress being made the coming year. While I have noticed from time to time that the association matters were improving in such places as Toronto, Fort William and a few other places, I have not noticed any special effort being made along the lines of reorganization or the organization of a new association of heating and sanitary engineers. However, I trust the officials are putting forth their best efforts and that they will be able to show results at the coming convention. The time was never more opportune or necessary than the present.

J. E. FARRELL.

North Bay, May 27.

REVISING THE BY-LAWS.

The Toronto Master Plumbers' Association is progressing very favorably and have about completed a revision of the by-laws governing plumbing work in Toronto, and will shortly bring their recommendations before the Board of Health.

One of their chief recommendations will be that a supervising plumbing inspector be appointed in Toronto, there being a lack of uniformity in the requirements asked by the various inspectors covering the different parts of the city. At present if a master plumber doing work in one part of the city is required to do a job in an entirely different way when he undertakes a contract in a district covered by a different inspector. It is felt that with a supervising inspector the same interpretation will be made of the by-laws by the different inspectors.

STATE PLUMBING LAW FOR OHIO.

Great interest is being centred on the State of Ohio, the Senate of which has just adopted a bill governing and regulating plumbing conditions for the state. One of its most desirable clauses is the creation of the office of a State Plumbing Inspector. This bill had the almost unanimous backing of Ohio master plumbers.

Ohio has secured what is badly needed in Ontario and other Canadian provinces, and the Master Plumbers' Association in Ohio is to be commended for its progressive action in raising the standards of plumbing work in that state.

Ontario plumbers have an opportunity to do likewise by attending the National M. P. A. convention to be held in Toronto, Aug. 30 and Sept. 1, and bringing into existence a new organization to take the initiative in re-organizing the trade in Ontario.

And the Plumber and Steamfitter has faith that the opportunity will be grasped.

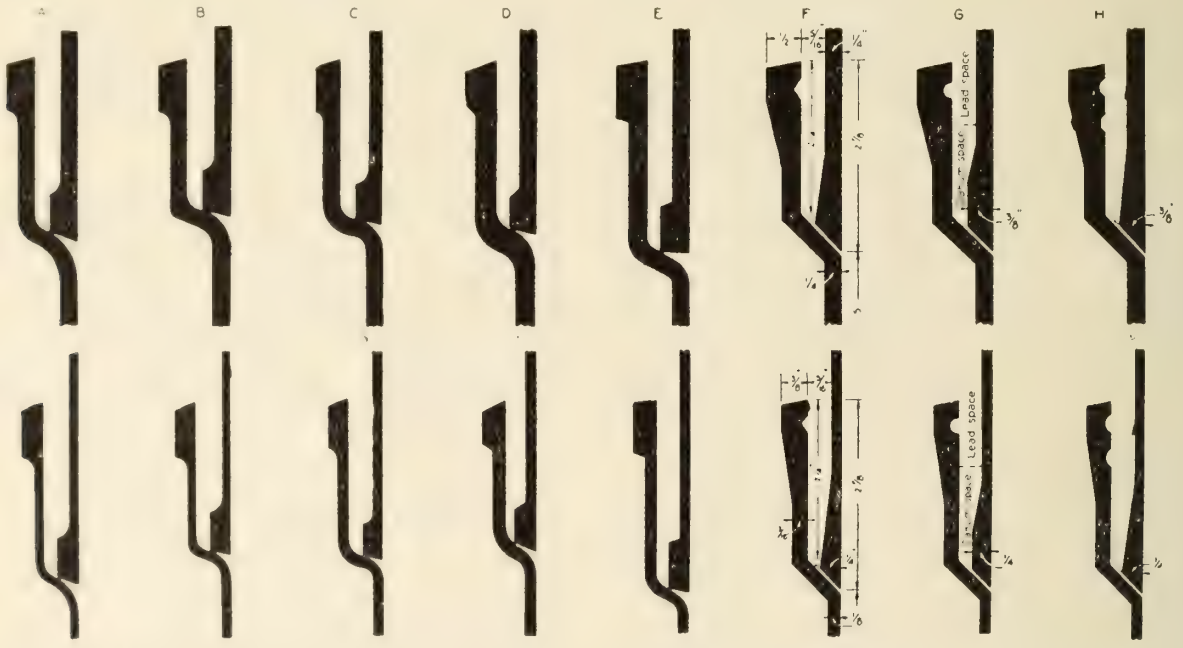
The Standardization of Plumbing Materials

Practical Work Being Done in This Direction by the American Society of Inspectors of Plumbing and Sanitary Engineers—The Subject Discussed at Conventions—Committee Handling the Matter Issues Report and Asks for Opinions of Plumbers on Standard Dimensions for Soil Pipe.

At the Omaha convention of the Society of Plumbing Inspectors, Eugene S. Willard presented a paper on the "Standardization of Plumbing Material," which met with hearty approval, as a result of the reading of the paper and the discussion thereon a committee was appointed to meet with a committee to be appointed from the manufacturers and jobbers of plumbing supplies. The Central Supply Association appointed such a committee representing manufacturers of soil pipe, and the National Association of Master Plumbers also appointed members of the committee. A meeting of this committee was held in Chicago, and it was decided that actual measurements should be secured from several manufacturers of soil pipe showing the exact sizes of wall thickness, depth of hub and other details for standard and extra heavy soil pipe from 2 inches to 6 inches. After considerable trouble and a lapse of a good deal of time, this information was secured and has been plotted on charts.

Speaking on the same subject at the Trenton convention of the society, last January, Mr. Willard said that while it is wise to begin moderately and perhaps confine the initial efforts to the standardization of soil pipe, that as soon as possible, without working any hardship upon manufacturers of such material, standardization should extend to fittings and many other articles of use in the plumbing business. "The sanitary earthenware business," said Mr. Willard, "has developed into a very extensive and elaborate one, and many new designs of sanitary eathenware have been brought out in keeping abreast of the time, and to meet the progress of sanitation.

"As a matter of fact, some of the staples in pottery are already practically standardized, such as in height from floor, width and depth. I doubt, however, whether it will be possible to change the many conditions which are presented to the plumber by the various problems of roughing-in his work, which compels the potter to carry a stock of various measurements. It is possible, in addition to making the standards of which I have already spoken, as well as the spud and sizes of thread, and 5½-inch measurement for the seat post holes, that it would be possible to have the sizes of the trap in closets brought nearer to a standard, and this might be of material benefit."



Sections of Soil Pipe Showing in A, B, C, D and E the pipe now made and in F, G and H a suggested standard for pipe from 2 in. to 6 in. in diameter. The upper row shows extra heavy and the lower row light pipe.

COMMITTEE MAKES REPORT.

Continuing their work the standardization committee are now sending to the inspectors belonging to the society (through Charles R. Schmidt, Calvert and Twenty-fourth Streets, Baltimore, Md., chairman), a blue print showing full-size sections of the hub and spigot ends of 4-in. soil pipe as made by the various foundries and shown in the sections A, B, C, D and E, with the statement that none of them were considered suitable for adoption as a standard. In addition to the sections as shown in the accompanying illustration, which is one-third actual size, there have been submitted for the criticism of the members the three sections F, G and H at the right of the bottom row of sections.

The committee sent with the blue print a postal card on which the members are requested to express their views in reference to the different pipes shown and to make any other suggestions which they believe should receive consideration. The post card leaves a blank for a member to record his favor or disfavor toward the recommendation that the wall thickness of the cast iron soil pipe and fittings shall be ¼ in. for extra heavy and ⅛ in. for light pipe, and that the building length of pipe shall be 5 ft. The building length for T Y reducers and increasers shall be 8 in. for 2-in. pipe, 10 in. for 3-in. pipe, 12 in. for 4-in. pipe, 14 in. for 5-in. pipe and 16 in. for 6-in. pipe.

As the entire plumbing trade is interested in the question, Chairman Schmidt, whose address is given above will be glad to hear from every reader who may have views on the subject that are based on their experience with soil pipe. The work is intended for the benefit of the trade, and is entitled to some effort to

assist by all who can contribute to a successful outcome of the committee's work.

Correspondent Criticises Design.

Writing in the "Metal Worker" of May 14, a correspondent signing himself "Limonite," writes as follows:—

"Without doubt there is nowhere a greater need of standardization than in the case of soil pipe and fittings. The utter chaos which exists as to wall thickness, lengths and weights of soil-pipe fittings, depths and diameters and other details of soil pipe hubs of both pipe and fittings is only too apparent. Fierce competition has gradually produced a most incongruous situation.

"Extra heavy fittings with scarcely 3-16-in. wall thickness are placed and accepted in a line of extra heavy pipe of over ¼ in. in thickness. Fittings have been in many cases shortened, caulking room reduced, hubs made more shallow, and the whole line of fittings trimmed or cut down to the lowest possible point, with the result that a given extra heavy fitting may vary in weight from different manufacturers over 50 per cent. Those makers who have been endeavoring to maintain a proper product have consequently been forced to meet unfair competition of the inferior and lighter fittings, because of the lack of standard requirements.

"All pipe and fittings of certain grade—standard, extra heavy, etc.—and of different diameters, up to a certain maximum diameter, should have the same wall thickness and the same depth, lead space and details of hub, except, of course, that for different diameters of pipe the hub should be of correspondingly different diameters. The fittings in all cases should be as short as good practice will permit. Lenghts can be more cheaply produced in soil pipe than in fittings. All Ys, Tees and sanitary Tees of a given diameter should be of the same building length. Bends of all degrees of a given diameter should have the same radius, and the caulking room or length of spigot from point of tangent to end of spigot should be the same.

"The adoption of a minimum weight for each fitting would be most desirable and would in itself make far easier the accomplishment of standardization by taking away the chief temptation of the manufacturer—that of making the fittings lighter.

"As compared with the advantages of standardization, it is quite unimportant as to what the details of the hubs may be, or whether they are 2½ in., 2¾ in. or 3 in. deep. Shallow and deep hubs have each their advocates, though with the latter it is probably a fact that no more lead is used nor can it be caulked deeper than with the shallow hub; possibly the only difference is that more oakum is used. Shallower hubs permit of more compact fittings, which is often in instalation a great advantage.

Effect of Proposed Grooves.

"It has been proposed to use a very much modified hub having grooves similar to those on water pipe, or a combination of these grooves with a ring on the spigot end above the ordinary spigot head, as shown in styles F, G and H, and in the contribution in the issue of May 7. The use of the beads on the water pipe is for the purpose of preventing through the hydrostatic pressures the blowing out of the lead or packing. On pipes for very high pressures the practice is to use two grooves each on the hub, or bell, and the spigot.

"It is a well-known fact that even the most vigorous caulking lead in a straight bell does not expand or compress below ¼ in. It would be idle to expect that this caulking would do other than drive the lead down on the lower side of the groove, leaving a void on the upper side, without in any way completely filling the groove; with the case of the additional ring on the spigot end the same condition would result. In neither case would this result enhance the tightness of the joint. It may be contended that the lead in solidifying will shrink between the groove and rings and thus effect a tight joint. This may be the case at the time of instalation, but consider the consequences of the considerable (far more here than under ground), contraction and expansion of the pipe on such an arrangement; either the lead must move in these grooves and thus destroy their tightness, or some point of the line give way. Anchored as the spigot would be in the bell, either the lead must move or the line break.

"It seems to us that the plain stuffing-box hub for soil pipe better takes care of contraction and expansion in the soil-pipe line than the proposed modifications. If there was no movement in the line the case would be very much different. If the joint with grooves is not rigid against contraction and expansion the grooves will not prevent the working out of the lead, which perhaps they are aimed at to avoid. It may also be stated that tapering grooves will make very easy, with the same force in caulking, the splitting of the comparatively light soil pipe hubs by driving downward of the lead against the inwardly tapering bottom half of the groove. Let us have uniformity and standardization and with best existent practice in mind, but not with something that has not been thoroughly tried by years of performance. Standardization means making uniform present practice, not the adoption of the untried."

The Manufacture of Sanitary Pottery Ware

The Various Processes of Mining, Mixing and Baking the Clay Described—Length of Time Required to Make the Various Fixtures—The Finishing Operations.

The clays mostly used in making the sanitary ware are kaolins and ball clays. Kaolin is the white clay which forms the principal part of the pottery bodies, and is usually selected for its color, its ability to mix into a homogeneous mass with the other necessary ingredients, and also to stand the fire necessary to complete the ware. There is, however, a very essential quality which most kaolins do not possess to any great extent. This quality is what is known as plasticity. In order to make up this deficiency in a mixture, some of the ball clays are necessary, as these are much tougher and more plastic than kaolin, and very naturally increase the plastic properties of the mixture.

As the shrinkage in both drying and firing are factors to be dealt with, the proper selection of both kaolins and ball clays, both as to kind and proportions, is a very essential feature in the potters' art, requiring the greatest care and skill to produce a body which will have the maximum of all the desirable properties and the minimum of the undesirable ones.

Flint Used in Two Forms.

Flint is almost a pure silicia and the potters use two forms—amorphous and crystalline.

The flint more generally used is the crystalline form, which is mined in the rock state, and, like clay, is quite abundant. For the potters' use this also has to be selected free from impurities and particularly free from iron, for this substance is detrimental to a fine quality of sanitary ware.

Both the amorphous and crystalline flints are burned in a kiln to soften them and make easier grinding. They are then ground first in what is known as edge running buhr stone mills. The flint is then ground in what are known as ball mills which reduces it to a very fine powder.

Feldspar is of various kinds and

grades, and is treated practically the same as that before ready for use.

The first operation in the manufacture of sanitary pottery is the correct mixing, of the different kinds of clay and other ingredients in the raw state.

The clay is first carried to the plunger, This plunger, which extends underneath the floor, is a large compartment into which water is run, and the water and clay are thoroughly mixed, with the object of removing any hard particles of clay and getting the whole mass into a liquid state. When the clay is in as near a liquid state as possible, it is run through very fine brass screens, which remove any foreign substances which might be in the clay up to this time. By means of pumps, the liquid clay is forced through pipes into what is known as the filter press. The filter press consists of an iron frame, holding a long row of what are called "press bags," which are so suspended that as the liquid clay is run through the pipe it falls into these bags, and the continual pressure forces the water out, and it seeps through the bags, dropping into the trough below the filter press.

Working Clay.

After the pumps have run continually until the press bags are filled with clay, the greater part of water is squeezed out, so to speak, and then the press is loosened so that the press bags, which are now filled with clay, may be taken down. As they are loosened, one by one, by the workmen, the clay, now in a more solid state, is let fall from the bags on slabs which are about 3 feet square and 2 inches thick. These slabs are carried on a truck and stored in what is called the damp cellar, being left in this cellar for sometimes months, during which time there is a natural change being brought about in the clay, which eventually makes it more plastic.

This change is called "aging," and must take place, else it would not be possible for the workmen, to properly work the clay into the molds.

The clay is taken from this damp cellar and carried to a mixing trough. In this trough, it is mixed with what is called "grog." This is a finely ground substance which will give the clay greater stability, after it is fired in the kilns. After being well mixed with the grog, the clay is shoveled into what is known as a "pug mill." The pug mill is a sort of a circular trough in which are a number of cog wheels revolving, and, as the clay goes through this trough, it is mixed much better than it can be done by hand, and also the air is forced out.

The clay comes from the pug mill in a continuous cylindrical roll which the workmen cut with wire in lengths of about 18 inches. After placing these pieces on a wheelbarrow, it is ready to go to the top floor of the building to be handled by the presser.

Modeling the Molds.

Before watching the presser at his work, it is well to take a look in at the mold shop. In the mold shop, after the sizes of the molds are marked upon the drawings, a modeler makes a model in plaster paris, from which plaster paris molds are made, and these molds must be somewhat larger than the fixture is to be when brought from the kilns, for in these molds the presser will shape the clay. Every detail of the fixtures must appear reversed in the molds, so that when they are taken away the clay will be the shape of the desired fixture. The reason that plaster paris is used is that a large part of moisture that is in the clay will be absorbed by the mold, the incidental contraction of the clay permitting the easy removal of the molds.

For an ordinary lavatory or a sink about a week to ten days is required for modeling and mold making.

From the mold shop you are directed to the lavatory pressing shop.

The presser presses the clay into the molds with his hands so that it takes the form desired, and after leaving the clay standing in the mold for some time the absorption of moisture from the clay into the plaster paris makes it possible to lift away the mold leaving the lavatory or sink of the shape which is desired.

It is now necessary for the presser to take some small sponges, a small piece of rubber and perhaps a knife and smooth the clay lavatory surface with these instruments, so as to leave no rough places, that the finished fixture may have no rough places which might collect dirt.

Now the molds are set aside to dry and the lavatory is left standing on the bench until the clay dries sufficiently hard that the fixture may be handled without danger of being broken.

Care Required in Drying.

The greatest care is taken throughout the manufacturing process to keep particles of iron, copper or other metal dust away from the ware, for the smallest speck of iron will boil out in firing and produce a brown spot on the white surface. If copper gets into the clay, green spots appear on the surface and these, of course, destroy the beauty of clay fixtures.

After the bath tubs and lavatories have been through the pressing shop, they are placed in a large drying room. This room is so constructed that heated air is drawn by means of a fan from large coils of steam pipes, and this air is blown into a drying room. This is done to expedite the making of goods, as the moisture is quickly drawn out of "green" fixtures when they are in the drying room.

A lavatory or sink is left in this room from ten days to two weeks, sometimes three weeks, while a bath tub is left in somewhat longer, as the clay is considerably thicker and requires more careful drying.

If a bath tub were taken from the drying room and placed in the kiln immediately, it would turn a light brown color after being fired or baked.

In order to get the white surface which is so much more beautiful and desired by practically everybody, the tubs are taken from the drying room and placed in what we call the "slipping and glazing" room.

Firing the Clay Molds.

As yet the clay is in a green state and has not been fired. In the slipping and glazing room, five or six coats of a very fine vitreous white clay in a semi-liquid state are placed upon the bath tubs by means of large brushes, and as soon as this white clay has dried, there are several coats of another white glazing mixture put on top of the clay. This last mixture when fired in the kiln becomes a pure vitreous, transparent, glassy surface. Because of the fact that the "slip," or white clay, and the glaze are put upon the ware while it is still in the green state or before it has been baked, when the tub comes from the kiln, all the elements are amalgamated into one mass, and it is not possible for one to break away from the other.

The ware is now ready to be baked or "fired." Two methods are employed at this stage, depending upon the style of fixture:

The larger sanitary pottery fixtures, such as bath tubs, laundry tubs, sinks, stall urinals and many patterns of lavatories are only "fired" or baked once.

Other fixtures, such as vitreous china, water closets, urinals, drinking fountains and vitreous china lavatories are subjected to two firings or bakings—first the biscuit and then the gloss.

In the first method, the various pieces of ware to be fired are carried to the kiln, where they are baked for about ten days, when the fires are extinguished and the ware inside allowed to gradually cool before being removed.

Grading the Finished Product.

The finished ware is then taken into the "drawing room," where an inspector carefully examines every piece and selects each as to its quality, labelling it as "A," "B" or "C" grade or worthless. The best are graded as "A" quality, some slightly warped or with small fire cracks or spots are classed as

"B" quality, and others as "C" quality. None of these defects, however, affect their sanitary qualities, and to most people the defects are not apparent.

The next point of interest is the grinding bed, a large flat grinding stone revolving on a center pin, something similar in construction to an old-fashioned miller's stone. On this grinding bed are placed lavatories, sinks and other pieces, and, as the stone revolves, the backs are ground smooth and even, so as to guarantee their being set flush against the wall to make a good appearance and fit.

The last and not least interesting feature of the manufacture of solid porcelain ware is to be found in the fitting and shipping room. Mechanics are here employed to fit to the ware such metal trimmings as may be ordered. Also every piece of ware is carefully gone over and cleaned up before being placed in the wooden crate which is to carry it to the purchaser.

Heating Small Cottages and Residences

"Don Rex," in the Plumbers' Trade Journal, Argues That Plumbers Can Secure More Small Residence Hot Water Jobs if They go After the Business.

Statistics demonstrate that but very few of the smaller city houses and of the cottage-built residences in the smaller towns and country districts are heated by steam or hot water. A few years ago there may have existed a plausible reason for the lack along this line, as at that time the cost of such an apparatus appeared too great to the man of ordinary means or income. The improvements secured in the methods of manufacturing and of instaling the parts of a heating system have reduced the expense to a point where the owner under present market conditions is working against his own interests by continuing without the benefits of a modern heating apparatus.

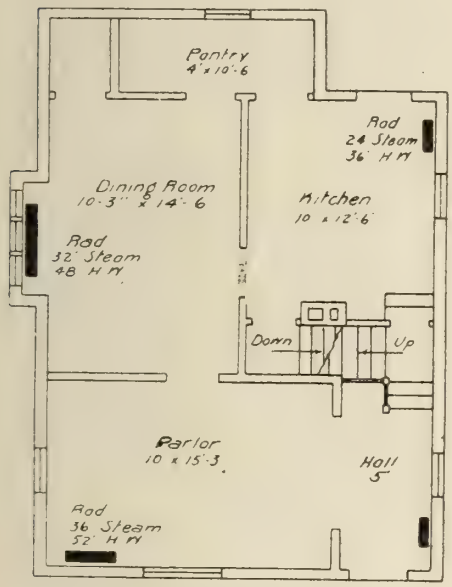


Fig. 1 —First Floor Plan.

There are thousands of six and eight-room houses warmed (or supposed to be) by hot air furnaces, and no good reason prevails why the majority of them should not be heated in the true sense of the word by steam or hot water; in fact, there is every reason why they should be equipped with such apparatus, and all heating contractors should appreciate the field and start a campaign in the neighborhood in which each is located, which will end in the securing of a large share of this class of very profitable work.

During a considerable portion of each year but little work is placed in the heating line, and it is at this season when much may be accomplished that will later on bring good returns. A judicious use of printed matter, circular letters and advertising space in the dull months will add largely to the growth of the business of the heating contractor. Such printed matter should cover and thoroughly explain in every detail the following important facts with reference to heating:

Points to Emphasize.

First: A cottage which will require six or seven tons of coal to heat it properly with a hot air furnace can be heated by steam or hot water with the use of but from four to five tons. Stated in another form, when burned in connection with a furnace a ton of coal will heat a room (under ordinary conditions of exposure) 12 by 12 feet, having a 9-foot ceiling. Under the same surroundings a like amount of fuel in a low-pressure steam heating apparatus will heat a room 12 by 16 feet, and in a hot-water heating apparatus a room 14 by 16 feet to a temperature of 70 degrees. Given on still another basis, one ton of coal will reach more than one-third farther in a hot-water heater and more than one-fourth farther in a steam boiler, than it will in a hot-air furnace. The smaller the job the greater the proportionate saving with the two former systems.

Second: A cottage consisting of from four to six average-sized rooms, together with a hall and bathroom, will require, when heated with hot air, a furnace having an 18-inch or 20-inch grate. If heated by steam or hot water, a small heater with a 16-inch grate would prove entirely sufficient.

Third. Either the steam or the hot-water heater will outlive the furnace in the ratio of two to one. The average life of a furnace is ten years under the most favorable circumstances, and many are practically worn out long before the expiration of that time, while a cast iron steam or hot-water heater can be offered as an indestructible type.

The owner of the cottage may secure all of the benefits of steam or hot-water heat, health, comfort, freedom from dirt and dust, an even temperature not influenced by cold waves or high winds—and the saving in cost of fuel as compared with a furnace job will not only pay the interest on the investment, but will at the same time afford a further gain year after year, which can be considered as better than that offered by a savings bank deposit.

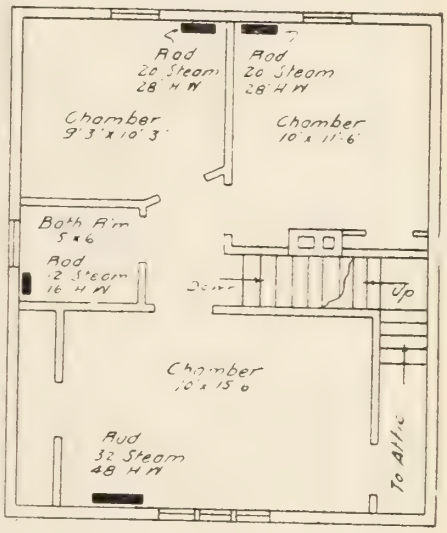


Fig. 2.—Second Floor Plan.

These facts should be emphatically impressed upon the minds of all builders, house owners and those about to build, and every steam fitter who is contracting in the line of steam and hot-water heating should familiarize himself with them so thoroughly that he can intelligently talk and fully explain and prove their existence to the house owner or other interested person.

Heating a Six-room House.

For the purpose of illustrating what may be accomplished in the way of heating a small house or cottage, we shall consider a six-room residence of the latter type, with bathroom and entrance hall included. About a year ago the Rochester, N.Y., Chamber of Commerce conducted a "cottage competition," that is to say, these officials invited architects and others interested along the same line, to submit designs and estimates covering three classes of cottages, those in

the first to cost $1,500, those in the second $1,250, and those in the third $1,000. Prizes were offered for the best designs of each class. The materials selected, as well as the style of structure, were optional with the contestants. The stated cost was to include the provision of a house complete, with bathroom having three fixtures, namely, tub, lavatory and closet, a kitchen sink, sewer and water connections to street, gas piping with fix-

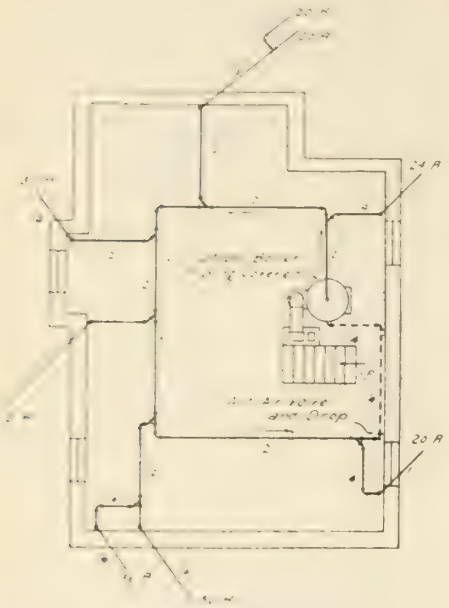


Fig. 3.—Basement Plan.

tures—everything necessary to an entire equipment, excepting the heating apparatus.

Figs. 1 and 2 show the first and second floor plans of one of the prize designs of the $1,500 class. We have had occasion to figure on the heating of several of these cottages and use the one given as a typical example of what may be accomplished in the way of warming such a building. In this connection we should add that there are many small houses and cottages which, owing to the opportunity afforded of locating the radiators differently, may be more cheaply heated than the one described, and we purpose to select that shown by reason of the scattered positions of the radiating surface.

The estimated amount of radiation necessary, considering wall, glass exposure and size of rooms (cubical contents), is as follows:

For Low-pressure Steam.

Rooms.	Amount of Radition.	Size of Rad. Tap.
Parlor	36 sq. ft.	1¼ inch
Dining room ..	32 sq. ft.	1¼ inch
Kitchen ..	24 sq. ft.	1 inch
Hall ..	20 sq. ft.	1 inch
Second Floor—		
Front chamber ...	32 sq. ft.	1¼ inch
Bath room	12 sq. ft.	1 inch
Dining room chamber	20 sq. ft.	1 inch
Kitchen chamber .	20 sq. ft.	1 inch

Making a total for both floors of 196 square feet.

For hot water we estimate on an accelerated apparatus, using a Honeywell generator.

Rooms.	Amount of Radition.	Size of Rad. Tap.
Parlor	52 sq. ft.	1 inch
Dining room	48 sq.ft.	¾ inch
Kitchen	36 sq.ft.	¾ inch
Hall	28 sq.ft.	¾ inch
Second Floor—		
Front chamber ..	48 sq.ft.	¾ inch
Bath room	16 sq. ft.	½ inch
Dining room chamber	28 sq. ft.	½ inch
Kitchen chamber.	28 sq. ft.	½ inch

Making a total for both floors of 284 square feet, this amount of radiation being necessary for an accelerated system.

Comparative Costs.

We shall first consider the estimate for low-pressure steam. Figuring that the fitter should realize from ten to fifteen per cent profit on the materials used and the labor expended, he can place this work complete, installing a round boiler with 16-inch grate, which would have a rated capacity of 275 square feet and 196 square feet of radiation, including a radiator 26 inches high in the dining room, automatic air valves, with piping in basement covered with sectional asbestos covering, with boiler covered with asbestos cement—in short, can furnish an entire first-class job for $165, and this figure includes an item of $10 for freight, cartage, car fares and similar incidental expenses.

Fig. 3 shows the basement plan of such a job with sizes of all pipes marked.

An accelerated hot-water job may be installed in the same building, using a heater with 16-inch grate, with a gross capacity of 450 square feet—a size amply large to do the required work thoroughly and economically—284 square feet of hot-water radiation, including a low radiator for the dining room, a Honeywell generator, a twelve-gallon expansion tank, an altitude gauge, a hot-water thermometer and, as in the steam estimate, covering for both piping and heater, and an allowance of $10 for freight, cartage, car fares and incidental expenses, for the sum of $225, this estimate allowing a profit of 15 per cent. on materials and labor.

Fig. 4 shows a layout of the piping for such a job, with the sizes of pipes and character of connections indicated.

Fuel Saving Pays Interest.

The owner of this property would then secure all of the benefits to be derived from the use of the best kind of a heating apparatus at an expenditure of from $10 to $20 yearly, this sum representing the interest on the investment, and when the fact that all rooms are thoroughly and comfortably heated, which cannot at many times be accomplished with a hot-air furnace, is considered it should prove an easy task for the fitter to sell such a job, particularly inasmuch as the saving in fuel alone will pay the interest on the money invested.

There are many other good points relating to steam and hot-water heat which are worth knowing and talking, when a prospective customer is in doubt as to the kind of a system he will purchase. By way of comparison it should be remembered that when we are sick we go to a physician who prescribes for our ailment; if we are in legal trouble we consult a lawyer; if our eyes bother, or eyesight fails we look to an occulist for relief. When the men of these and other professions wish sanitary plumbing installed, they consult you, Mr. Plumber, or if in need of a heating apparatus, they consult you, Mr. Fitter, expecting that you will know your business thoroughly and be competent to advise them. If you are not well prepared it behooves you to "get busy on the job" and post yourself fully on the details and character of your own particular business.

You may be sure that the business of steam and hot-water heating is bound to

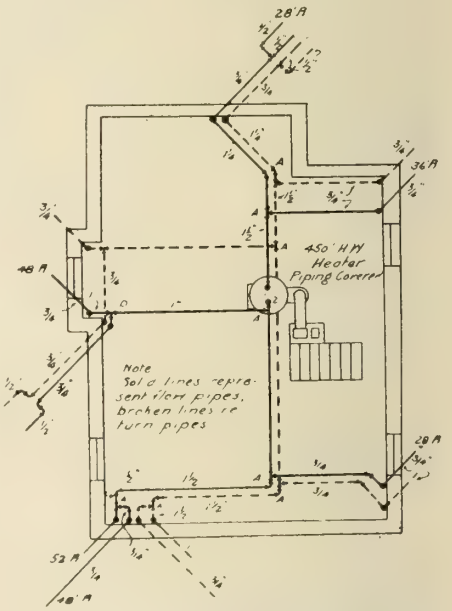


Fig. 4.—Layout of Piping in Basement.

make greater progress in the coming years, for the small cottage will be heated, the furnace in the old house will be replaced by a modern system, and the up-to-date, energetic heating contractor will get this trade.

J. A. Lockerby, Edmonton, has the plumbing, heating and ventilation contract for the new $16,000 Seventeenth Street School at that city.

The Science of Plumbing and Heating Work

Taking Note of the Marvelous Advancement Made in Both Heating and Plumbing Work During the Past Three Decades, the Prediction is Made That the Scientific Basis of Both Branches of the Trade Will Soon be Recognized and the Trade Will Become Professions.

Written for The Plumber and Steamfitter by C. H. Denison.

Once while attending a master plumbers' convention I heard a fellow who thought he was a swell guy, and that it would make a decided hit, say: "Oh, it's not the plumbing trade any more, it's a profession." Somehow, the sentiment fell rather flat, but he was at least headed onward and upward.

Plumbing is more than a profession, and, in fact, has nearly reached the stage where it can be called a science, and will when the human mind has succeeded in ascertaining the exact truths as far as may be upon this footstool of ours.

I expect to live to see the day when it will be called, "The Science of Plumbing" and "The Science of Heating," and, viewed in the light of what has been done in the past twenty-five or thirty years, I believe I could lay odds of two to one that I'd win out.

As we now view the plumbing or heating contractor, it seems rather queer to consider that he may be soon called upon to possess a scientific education as pertains to his particular branch of life's work, but let us examine matters for a few moments and try to observe in which way the wind blows.

Evolution Makes Many Changes.

Many who read these lines can easily remember the time a few years ago when the steamfitter who connected radiators on the one-pipe plan for steam heat was regarded as little better than a lunatic. "How will the water (condensation) get back to the boiler?" "What, water flow against the flow of steam? Impossible," they said. Yet the radiators were connected, and much to the surprise of such skeptics, the heating jobs worked.

In those days the hot air furnace was easily "cock of the walk," and us fitters had a mighty hard row to hoe, and many good heating jobs were lost because we could not convince people that boilers would not blow up or burn more coal than the furnace.

The heating contractors were mighty ignorant, as a rule, and the boilers were "hooked up" to almost any old kind of a chimney, regardless of its suitability to the job in hand. I have seen dozens of boilers spit fire when the fire pot door was opened, simply because the chimney was from 50 to 75 per cent. too small to do its duty, and even to this very day the draft question is not understood as fully nor considered as thoroughly as it should be in both steam and hot water heating.

Now, when it came to figuring the amount of radiation necessary to heat any certain building, it was simply a guessing game and the amounts would ofttimes vary several hundred feet on a job of any considerable size. From observation, experiments, and experience, many in the business now know a heat unit from a cockroach and can figure what the heat unit will probably do with some degree of certainty. We say "two and two make four," and everybody at once agree that it is true, and that no time need be wasted in arguing the statement. Now, if I say "forty feet of radiation will heat 1,600 cubic feet of space in a room there will be at least fifty readers who will at once begin to show me why it will either over-heat or under-heat the room, and that they can show me a better way of estimating. (I simply use the 40 feet and 1,600 cubic feet as an example.)

You see the efforts mostly so far are individual and there is really no standard that is universally accepted. Perhaps this is because there is none which is yet accurate or full enough to cover the case; or possibly we have not yet dug deeply enough into the different problems which have and are confronting us, and it's easier, anyway, to put off until to-morrow what might be done to-day. We are shy the universal standard, at any rate.

Plumbing Advancement Amazing.

The changes which have taken place in the plumber's field in the past quarter of a century are certainly amazing. Some people are of the opinion that plumbing has not advanced correspondingly with heating, but I fail to see it in that light. Go into a bathroom which was installed 25 or 30 years ago, and then visit one of our most modern toilet room instalations and judge for yourself. Observe the venting, fixtures, traps, tubs, lavatories and see if inventive genius has been very much asleep at the switch in the past few years.

We are now in a position to ask that if such an advancement has been made in the past three decades, what will be the position of affairs in 1940?

How will the heating then be done? What disposal will be made of the waste products and what is the most efficient method of heating and plumbing our airships? The man who says that things will then be installed as they are now simply isn't a progressive citizen and is failing also to use his common sense. There is not a day passes but what some improvement is brought out upon our present apparatus, or some different utility patented.

Read over the reports of patented inventions that are published in various papers from week to week and you will be amazed by the number and variety shown.

We are, therefore, rapidly drawing near the point where the trades will, of necessity, become sciences.

Men who know enough to simply stick a pipe here and there, hit or miss, let her go Gallagher, will find that there is no field for their efforts. They must know why they put the pipes thus and so, what the pipes will do to a hair's breadth, be able to quote the law in the case, and the authority in the case.

Must Install Work Scientifically.

They much be able to figure the case out long before the goods are installed and, after the job is in, it must prove up exactly and make good their figures. To-day it don't. Not by a long chalk in three jobs out of five. It must be every job in these days, and the law will require it also.

When the proposition is reduced to a science, the efforts will be along certain well-defined lines, the main points of which will be as plain as 2 plus 2 equals 4, and the plumber or fitter will be the man at the helm. More sanitary and more efficient methods will be found regarding the disposal of the sewage. To say that the present means are best would be to utter a slander upon the inventive minds of to-day and those of the days to come. We are progressing and the last third of a century has seen the greatest advance in the history of the world's progress. Whether he likes it or not, the plumber and fitter must keep up with the times or be left behind, and as the events are showing, in the future he must be prepared to shirk no longer, but make good on the amount of work which falls to him as the result of the position his science will occupy in the working out of the world's progress. The past has been done up good and plenty, the present, with its many perplexities, is with us; the future is yet to come. We can make ourselves equal to any occasions if we but study, think and practise.

Why not, therefore, take note of the future and begin to get ready to occupy our true position?

Plumber Secures Order for 100 Gas Ranges

Winnipeg Plumber Enlarges His Business by Establishing a Hardware Department—Has a Manager to Look After Store While he Goes Out After Business—Gets Order for Over 100 Gas Ranges for an Apartment House.

Winnipeg, May 26.—After six years' experience in the plumbing and steamfitting business, J. J. Wallace, of Winnipeg, resolved to open a hardware store and combine the two trades. The old plumbing shop was situated favorably for splendid business in a rapidly-growing locality on Portage Avenue, and it was not because the plumbing trade was in any way disappointing that Mr. Wallace turned his attention to hardware

D. J. WALLACE, WINNIPEG.

stocks. It was his opinion, as it seems to be the growing opinion of many who follow each individual line of trade, that the trades should be united, since they are a supplement one to the other. Not only can the two trades be conducted under one roof and at practically the same expense, but the buying facilities are doubled and that which would be wasted in one line can be utilized in the other. A plumber, Mr. Wallace argues, must have a man on hand in the office all the time, and why might he not be used in selling stoves and razors, as well as bathroom fixtures and gas mantles?

The new enterprise directed Mr. Wallace to a new store, a plan of which is reproduced. The rear of the main floor is spacious and used to stock heavy goods and plumbing fittings. The basement, which is full size of the floor area, makes an excellent workroom, and is well equipped with plumbing and steamfitting devices.

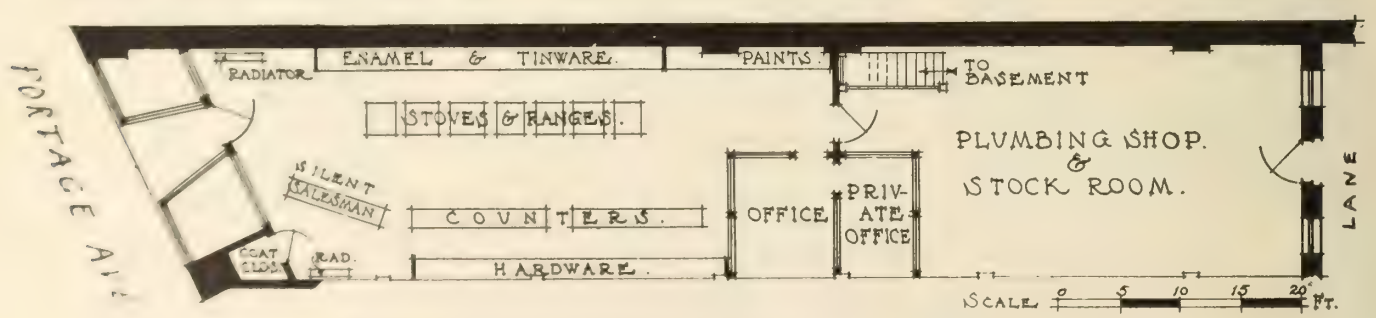
The plumbing work is in the hands of four mechanics, including a foreman, while Mr. Wallace confines himself to estimating, bookkeeping and the soliciting of jobs.

The hardware department is managed by R. C. Wigglesworth, formerly with Batty Bros., Norwich, Ont. He came west last autumn, and has become enthusiastic over the trade in this city. The stock is large and well-assorted, and Mr. Wigglesworth is patiently working up an enduring business.

Mr. Wallace realizes, as all merchants must, that planning and scheming must be done in order to secure business. He solicits hardware trade from builders and contractors, with whom the plumbing trade bring him into contact. For an apartment block recently, besides securing the plumbing and steamfitting, he secured an order for over one hundred gas ranges, which were installed in every room in the building.

The interior of the store is not neglected, and the idea of putting a host of small wares on display just inside the door seems to have been a profitable one. The selling of stoves is made a leading feature, and all the gas stoves and ranges are connected with gas piping in order to give a customer an adequate demonstration of all the parts of the article. Being in an excellent residential district, the windows are kept dressed as well as possible—Mr. Wallace and Mr. Wrigglesworth each believe firmly in advertising, and in this connection advise the publicity of definite articles which they wish to run off, with the sale prices attached.

Interior of D. J. Wallace's New Store at Winnipeg.



Floor Plan of D. J. Wallace's New Store at Winnipeg.

Toronto Master Plumber Remodels His Shop

Progressive Methods Adopted by a Young Master Plumber in Toronto—Advantage Taken of a Fire to Remodel His Shop and Install New Machinery.

A growing plumbing business in Toronto is that conducted by R. J. Shannon, at 1233 Queen Street West. Every little while Mr. Shannon adds a new feature, which increases the work brought to his place and which also requires an expansion of business premises.

Several months ago a fire damaged the rear nortion of Mr. Shannon's establishment, and before the embers were cooled he had planned a new workshop to take the place of the burned part. This new workshop has just been completed, and installed in it is a 5 horse power pipe-cutting machine manufactured by R. McDougall & Company, Galt, which will cut pipes up to six-inch size. A gas engine supplies the power, the whole costing about 25 cents a day to operate and enabling the office man to do work which would ordinarily take several hours of a journeyman's time at a great saving in expense.

The accompanying plan will give some idea of how Mr. Shannon has laid out his shop. The show room faces on Queen Street with a window on Gwynne Ave., the door being set in the corner of the two streets. At present Mr. Shannon is featuring gas ranges, as being most seasonable, and these goods are given the prominent place. Various sizes of Moffat National gas ranges form a background for the window display with gas plates in the foreground. On one side and at the back are shown a number of styles of pedestal and wall lavatories, kitchen sinks and closet combinations, and on the other side are a hot water boiler, a kitchen range boiler and various sizes and styles of steam radiators. In the centre of the shop is a huge range on which rests a large fern. A desk for convenience in taking orders completes the furniture. There is no raised window platform, and the windows extend almost to the floor, so that a clear view may be had of the whole showroom from the outside. A mission-style wainscoting six feet high runs around the shop and a bright red paper covers the rest of the wall to the ceiling. A lighter colored paper is the ceiling. The flooring is hardwood, well oiled.

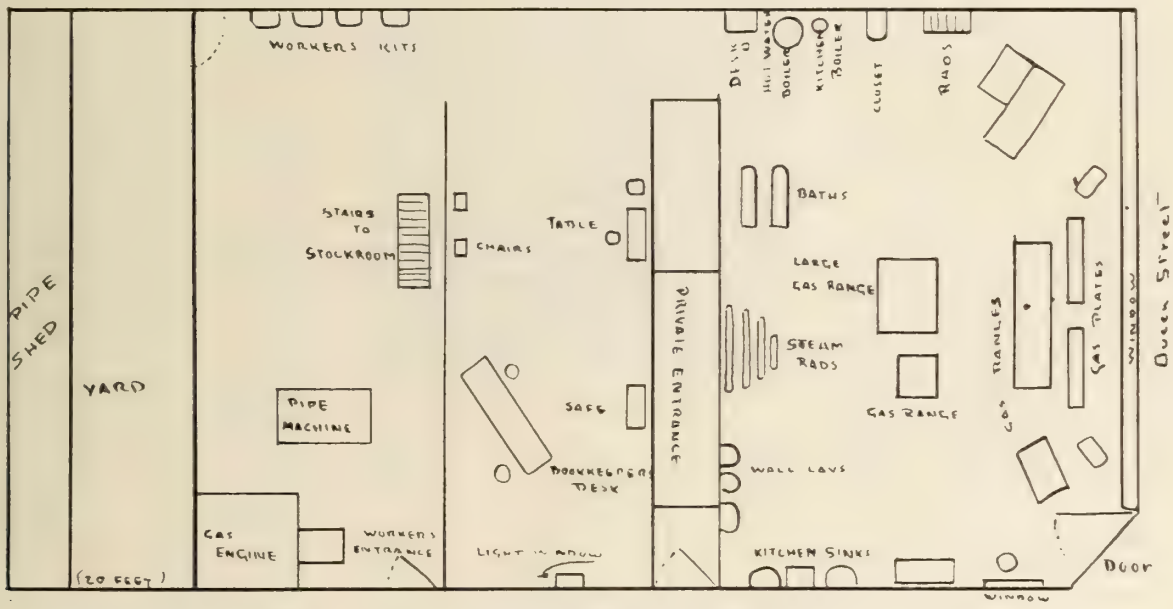
Back of the showroom is the office, furnished with a bookkeeper's desk, safe, chairs and table, where work may be discussed and plans drawn. To the rear of this again is the new workshop. A large pipe cutting and pipe-threading machine stands near the centre and a gas engine for running the machine occupies a corner. This machine can be operated for 25 cents a day, but the saving in time, labor and worry over the old method in a short while more than repays the expense of the cost and installation of the machine. This workshop serves as well the purpose of a storehouse for the plumbers' working kits, one of the sides of the room being given over for this purpose.

In the basement below the workshop are the iron pipe supplies, a series of wall pockets serving as receptacles for the various sizes of nipples, caps, short lengths, etc. All these pockets are neatly and systematically labelled so that all goods can be readily found. In the basement under the showroom is a duplicate nest of all pockets for brass supplies. A shed in the yard outside serves as a storehouse for pipes.

Starting off with repair work Mr. Shannon was not long in the business before he took on contract work. Steam and hot water heating came next, and then followed the stocking of the showrooms with enamelware and heating goods. A systematic business method was adopted with bookkeeper to look after the work. Then came the bidding for private water systems installation in the better class of houses in the surrounding towns, where no waterworks systems exist. This year gas ranges are being pushed. Three weeks ago electric wiring was added to the many other lines, and now Mr. Shannon plans to add a stock of gas and electric lighting fixtures.

Each of the departments is in charge of a competent man. Mr. Shannon has at present eight men helping him. He has not neglected his earliest work, for two men, and sometimes three, are daily engaged in repair work alone.

The premises are brick-faced, about 18 feet by 60 feet over all, so that considering the size of the property the layout of the space and the arrangement of the rooms and stock the system planned by Mr. Shannon is a very good one.



Sketch Showing Lay-out of R. J. Shannon's Plumbing Shop at Toronto.

The Superior Court of Quebec has given notice that a dividend will be paid to the creditors of the Desmarteau Plumbers' Supply Co., Montreal, on June 17.

IS CHEAP COAL ECONOMICAL?

Editor Plumber and Steamfitter,—I am taking considerable interest in your question and answer department and would like to hear from you upon the question of cheap coal. Is it economy to use a cheap grade of coal as fuel in house and stores? Trusting you may find a place for this at the proper time, I remain,

SUBSCRIBER.

St. Catharines, May 23.

We should consider that it depended upon who fired the boiler and how much knowledge he (or sometimes she) had of the proper manner of running the boiler. With proper attention and the correct use of the various drafts a person who understands matters can get satisfactory results out of a cheap fuel provided the apparatus is correctly designed. No person, however can take the best boiler on poor coal and with an insufficient draft and obtain good heating results.

We should advise you to look over any jobs very carefully before advising the use of cheap fuel.

When hard coal is used in either a furnace or a boiler on a house or store heating job, a considerable amount of fuel can be saved by banking the fire with coal dust or pea coal. This will hold the heat and keep up the steam several hours longer than burning the coarse coal without any banking at all. The main trouble with using a cheaper grade of coal would probably be that the people would not attend to firing sufficiently. They wouldn't—even if they knew how.—D. C.

LIME IN WATERBACK.

Editor Plumber and Steamfitter,—The water in my locality is somewhat hard and very frequently the water backs stop up completely. Also connecting pipes from water back to range boiler. How can I prevent this and be sure that it is correctly done?

J. S.

Kingston, May 26.

We should advise our correspondent to use a water softener device which is placed upon the cold water pipe between the range boiler and the water back. This apparatus is guaranteed to do the work and overcome the difficulty to which our correspondent alludes. The apparatus to which we refer is the Debuis Automatic Water Softener and Scale Removing Device, made by the Compound Injector & Specialty Co., 42-44 N. 52nd Ave., Chicago.—D. C.

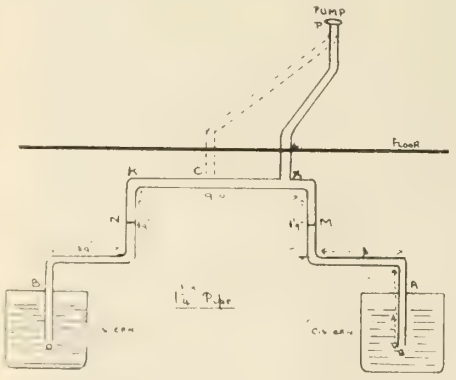
DRAWING WATER FROM PUMP.

Editor Plumber and Steamfitter,—Will you please answer in your next issue whether the pump shown in the sketch will work or not. It will draw the water, but it takes 15 strokes. Leave it awhile and you have to pump fifteen more strokes and the pump holds its prime. After you get through pumping you can hear a noise as if it was siphoning from one cistern to the other.

J.A. D.

Parkhill, May 18.

From the description I should be inclined to think that Mr. D. had a small leak somewhere on the lines of piping. I would advise him to go over



Change Location of Piping.

the job very thoroughly before he makes any changes and be sure that the job is tight. He can probably disconnect his pump and put on a steam gauge and then hook on the pump and test the system and in this way find out for sure whether or not it is tight.

In the two cisterns A and B, the line S X is shorter than the line O X. Now the water might siphon over, but I do not think it would. I think that he would get a more equal lift if he ran the pipe as shown by the dotted lines C P, taking out the present line X P. In case the system seems to then siphon he can put in a check valve on each line at the points M and N. This would make it much easier for the pump to do it's work anyway.—D. C.

SIZE OF WASTE PIPE.

Editor Plumber and Steamfitter,—Does the Toronto plumbing by-law call for a 1½ inch trap and a 2 inch pipe on a type casting machine with a water jacket, where a ¼ inch pipe would be quite sufficient to carry off all the waste water.

READER.

Toronto, May 26.

No, the plumbing inspection department say if the water is used for cooling purposes the waste pipe may be connected to any fixture, or it may even be run off with the rain water either into the sewer or out on the surface, in the latter event if neighbors do not object. The pipe, however, should be larger than ¼ inch.—Editor.

LEAD WOOL.

Editor Plumber and Steamfitter,—Can you give me any information as to what lead wool is and what uses it can be put to?

J. JOHNSON.

Moncton, N.B., May 20.

Lead wool or shredded lead has been used for the purpose of calking joints on both water, and gas mains. It is stated that it makes a very flexible joint and one which holds well. It can be used on very wet work or even under water. It has been used with success by various gas companies and the resulting loss of gas is stated to be less than with the usual poured joints.—D. C.

JOURNEYMAN ADDRESSES MASTERS.

Editor Plumber and Steamfitter,—I would be grateful to you for space in your columns of the next issue of the Plumber and Steamfitter, in reference to Master Plumbers' Associations and the organization of same, to which your valuable paper aims at constantly as being the only solution to protect the public and the business interests of the trade.

Having been a constant and interested reader for the past ten years, of the Plumbers' Trade Journal, Metal Worker, Hardware and Metal, and,

since its first issue the Plumber and Steamfitter, I have noticed with satisfaction the progress of the Canadian N. A. M. P.

I notice in Plumber and Steamfitter of April 1 the bad condition of our trade in the most populated cities of the Dominion, and it is surely not a credit to the members of the craft, and is a very grave matter, which should be given serious consideration at the coming Toronto convention. It is a surprise to me, to read in Official News of the N. A. M. P. the different heading of committees, and fail to see any committee in reference to journeymen plumbers and steamfitters. Where did the present master plumbers come from, and who performs their work for them? Surely the journeymen plumbers and fitters play an important part in the trade, and should not be ignored by the N. A. M. P.

If organization is a necessity for the master plumbers it is for the journeymen and they are organized in all our Canadian cities, and should be recognized as such. The journeymen's locals in Montreal, Ottawa and Toronto, have done a great deal to advance the sanitary conditions of our trade at large, which has benefited the public and the craft. Is it a credit, therefore, to the men of our craft to read of the conditions that exist in Guelph and Halifax.

The journeymen are always willing to meet their employers' association committees for the best interest of the trade, and I believe, that the N. A. M. P. should advise their locals at its next convention to meet the journeymen and co-operate with them in uplifting the conditions of our trade. It must not be forgotten that we derive our living from the same source, and what benefits one branch of the trade benefits the other.

Amongst the head officers of the N. A. M. P. are men who served their time with me, have belonged to the same journeymen's locals with me (and good members at that) and I am sure if it was to their advantage that they belong to the Journeymen's Association then, that they should not give it the cold shoulder now, for they know that the United Association is here to stay and is doing much of educational benefit to its members.

JOURNEYMAN.

Ottawa, May 23,

The Ontario Brass and Copper Co., brass spinners and electro platers, 491 King Street West, Toronto, assigned on May 30, with liabilities at about $20,000. The assets are worth about the same figure. The company which has been about five years in existence will likely be reorganized.

Good Stories About Plumbers

Lew Robb, of the Empire Manufacturing Company, London, who is to be seen in the accompanying picture mailing a letter containing a fat order received from J. E. Farrell just after the latter had opened his fine new plumbing shop at North Bay, tells a good story about two journeymen plumbers who attended a convention in a small Ontario town a few weeks ago.

The journeymen had been working steady and had some money to burn, and making several calls between the depot and the hotel they found the hotel

Lew Robb at North Bay.

accommodation all booked up when they finally interviewed the clerk. The plumbers, however, asked the clerk to join them at the bar and returned their good fellowship by saying that he had the keys for the Methodist church across the road and if they couldn't do any better he would get them a couple of blankets and pillows and let them sleep there. The journeymen accepted and, taking a supply of nightcaps along, turned in for the night.

About 2 o'clock in the morning, however, the whole town was aroused by the ringing of the church bell, which was generally a signal for fire. Excited people gathered around the church. Some went to the hotel for the keys, but the night clerk could not be found. There happened to be an old-fashioned letter box in the door of the church through which the mayor, peeping through to discover the cause of the disturbance, saw a form near the door. "What is all the noise about?" asked the mayor. "Send a couple of Manhattan cocktails and a pitcher of ice water to Pew 87" responded the plumber.

Lew vouches for the accuracy of the story and he has a good reputation for story telling.

UNION PIPE COUPLINGS.

The union pipe coupling, while one of the handiest of couplings, is also one which can give a vast amount of annoyance and often too little consideration is given to the style of union to be used.

To overcome the annoyance of the regular union many devices have been made from time to time with varying results, but undoubtedly the biggest stride in union development, since its conception, was making the ground joint, which eliminates all need of packing or gaskets. First this was only successfully accomplished in the all-bronze unions, but they proved to be too expensive for general use and not fully satisfactory to use with iron pipe as they stretched when the pipe was screwed in.

To develop a union with all the advantages of the bronze union, and not its disadvantages, yet be reasonable in price, was the work of E. M. Dart, Providence, R.I. How successful the Dart Union is may be determined by the fact that they are recognized as the standard to-day.

The great advantage of the bronze union, is its immunity from corrosion, thus permitting a joint always being made tight, for should one of the faces of a ground joint be corroded the means of making that joint is gone. This is one of the strong features of the Dart Union; it has bronze on each face of the joint, and these faces are forced into heavy malleable iron ends, then machined to a ball-shaped form, which permits a joint being made either in or out of align. The heavy iron thread ends overcome the disadvantages and stretching of the softer bronze ends and adds strength to the union.

The Dart Union Company have a modern-equipped factory on Niagara St., Toronto, for the manufacture of these unions, both in the screwed and flange types. As they guarantee every Dart Union to be right, every precaution is used to insure perfect construction and all parts are machined to exact sizes and forms. They report an ever increasing demand and, considering the advantages of these unions, it is not to be wondered at, for they are quickly installed and guaranteed to be always tight and always serviceable, besides being moderate in cost.

Gossip of the Plumbing and Heating Trade

Items Gathered in all Parts of Canada—Letters Invited From Subscribers, Giving Particulars Regarding Changes in Firm Names, Contracts Secured, Novel Methods of Advertising or Other News—Photos of Anyone or Anything Connected With the Trade Also Welcomed.

Mills & Beers, plumbers, Calgary, have dissolved partnership.

Bolduc & McLean, plumbers, have been registered at Montreal.

B. J. Millar, 397 Spadina Ave., Toronto, left last Friday on a pleasure trip to Callen, Scotland.

Long & Co., plumbers, Welland, have removed to their new premises, formerly occupied by G. E. Connor.

The Standard Sanitary Mfg. Co., Toronto, has been authorized by the Dominion Government to increase its capital from $500,000 to $1,000,000.

Although the dissolution of partnership between Robert Shea and Frank Archibald, Winnipeg, plumbers, took place on March 4 last, publication of the fact is only being made now.

Further contracts have been awarded in connection with the erection of the additional wing to McGill University at Montreal. The plumbing, heating and ventilating will be done by James Ballantyne.

The American Brass Founders' Assn. will unite with the American Foundrymen's Assn in holding their annual convention at Detroit from June 6 to 10. A number of Canadian brass manufacturers are planning to attend this meeting.

The G. B. Prowse Range Co., Montreal, has been incorporated to carry on a plumbing, gasfitting and steamfitting business. The incorporators are C. C. Prowse, W. P. McVey and A. Mallette, all of Montreal. The capital of the company is set at $50,000.

The journeymen plumbers of Victoria, who last month went out on strike for a closed shop and a wage of $4.50 per day—a raise of 50c—have returned to work. With the exception of one or two shops the master plumbers have conceded the demand.

The union plumbers and steamfitters of London are likely to have their request granted that a plumbing inspector be appointed. The board of health have sent on the request to council with their recommendation of concurrence. The plumbers pointed out that a revenue of $1,200 could be raised to pay the inspector's salary by charging the master plumbers a license of $10 each, and charging $1 for a permit and $1 for each inspection.

Archie Beare, who for several months past has been on the city traveling staff of The James Morrison Brass Mfg. Co., Toronto, has returned to the staff of the Standard Sanitary Mfg. Co., and will represent that company in Eastern Ontario.

Mr. Ramsay, of Merrithew & Ramsay, plumbers, steamfitters, etc., of New Westminster, B.C., has presented a cup for competition among the baseball teams of that city. The trophy will be a handsome silver one, and the contestants will be amateurs.

The opening of the plumbing display room down stairs at the James Robertson Co.'s plant at Toronto, has made it possible to extend the business offices into part of the old showroom upstairs. John Owston, sales manager, has now a new room in the office extension.

The recent death of Chas. Sims, for many years superintendent of the brass department of The James Robertson Co., Toronto, has necessitated a number of changes among the workers of that company. E. Parker, who was assistant to Mr. Sims, will in future have charge of all mechanical matters of the brass department, and J. R. Foster, city traveler, will look after the customers' interests in the office. Frank Webb, of the office staff, will take Mr. Foster's place outside and assist Richard Crashley as city traveler in Toronto.

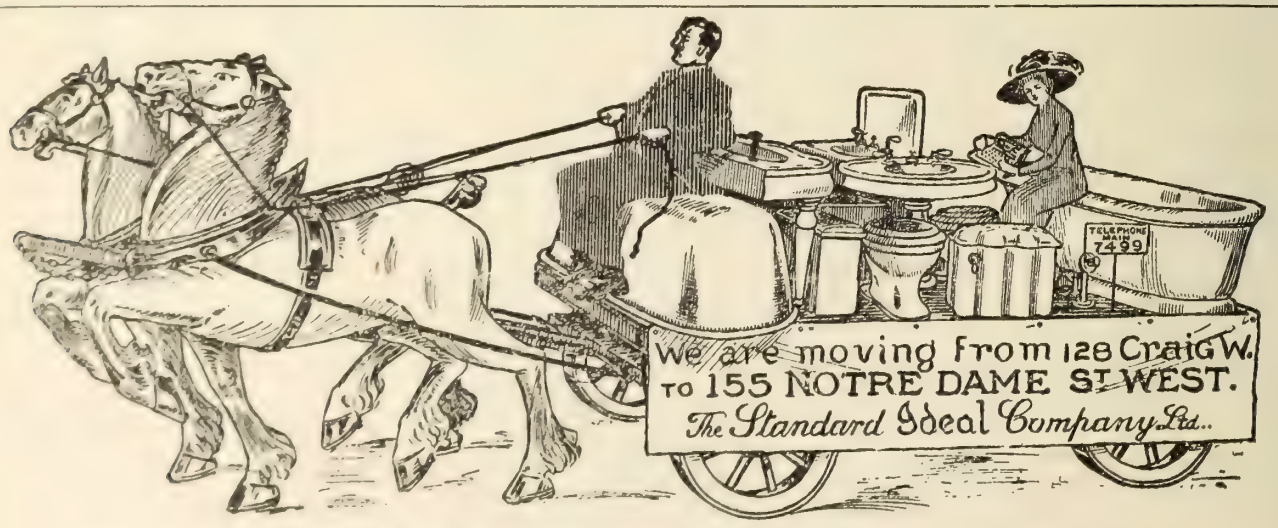
MEETING AT DETROIT.

The plumbing supply men of Ontario will hold their next quarterly meeting at Detroit on Monday, June 13. Questions of interest to the trade will be discussed. The intention of those attending is to arrive in Detroit on Sunday morning, June 12, and spend the day in seeing the city. On Monday there will be informal talks on trade matters, and Tuesday the supply men will be the guests of the Ideal Manufacturing Co., Detroit and Windsor. The brass manufacturers of Canada will also hold a meeting at Detroit that week, and will be entertained by the Wolverine Brass Manufacturing Co., Grand Rapids and Chatham.

NEW DISPLAY ROOMS.

The Standard Ideal Co., Port Hope, whose Montreal salesrooms have been removed from 123 Craig St. to 155 Notre Dame Street West, got out an amusing post card announcement in connection with the change, the illustration being reproduced herewith.

Arrangements have been completed for a similar move in Toronto, the old premises at 50 Colborne Street having been outgrown, and the opportunities for display being entirely inadequate. Splendid premises have been secured in the Oak Hall building, 119 King Street



During the Removal of the Standard Ideal Company's Warerooms at Montreal Recently.

East, the ground floor of which is being remodelled and fitted up into a display room, the two wide windows providing excellent facilities for displaying enamelware to advantage.

The new locations place the Standard Ideal Co. in a splendid position for displaying their wares in both Toronto and Montreal, and the increased publicity should be of advantage to the company and the trade at large.

OCTAGONAL FINIAL PATTERN.

Let A, B, C, D, E, F, G, H, Fig. 2 be the elevation of an Octagon Finial. The elevation must be drawn in such a manner that one side appears in profile. Draw the plan to correspond with it, divide the profile E.F.G.H. from the divisions. Draw lines to plan in usual way, cutting mitre lines K.R. and L.R. Lay off stretchout U.V. at right angles to the side of the plan, and through the points in it draw the usual measuring lines. Draw parallel lines to the stretchout intersecting with the points in mitre lines, or plan. A line traced through the points thus obtained will describe the pattern of one side of the article. In this case the ball on top is shown but is a separate piece to be added to make a finish. W. J. R.

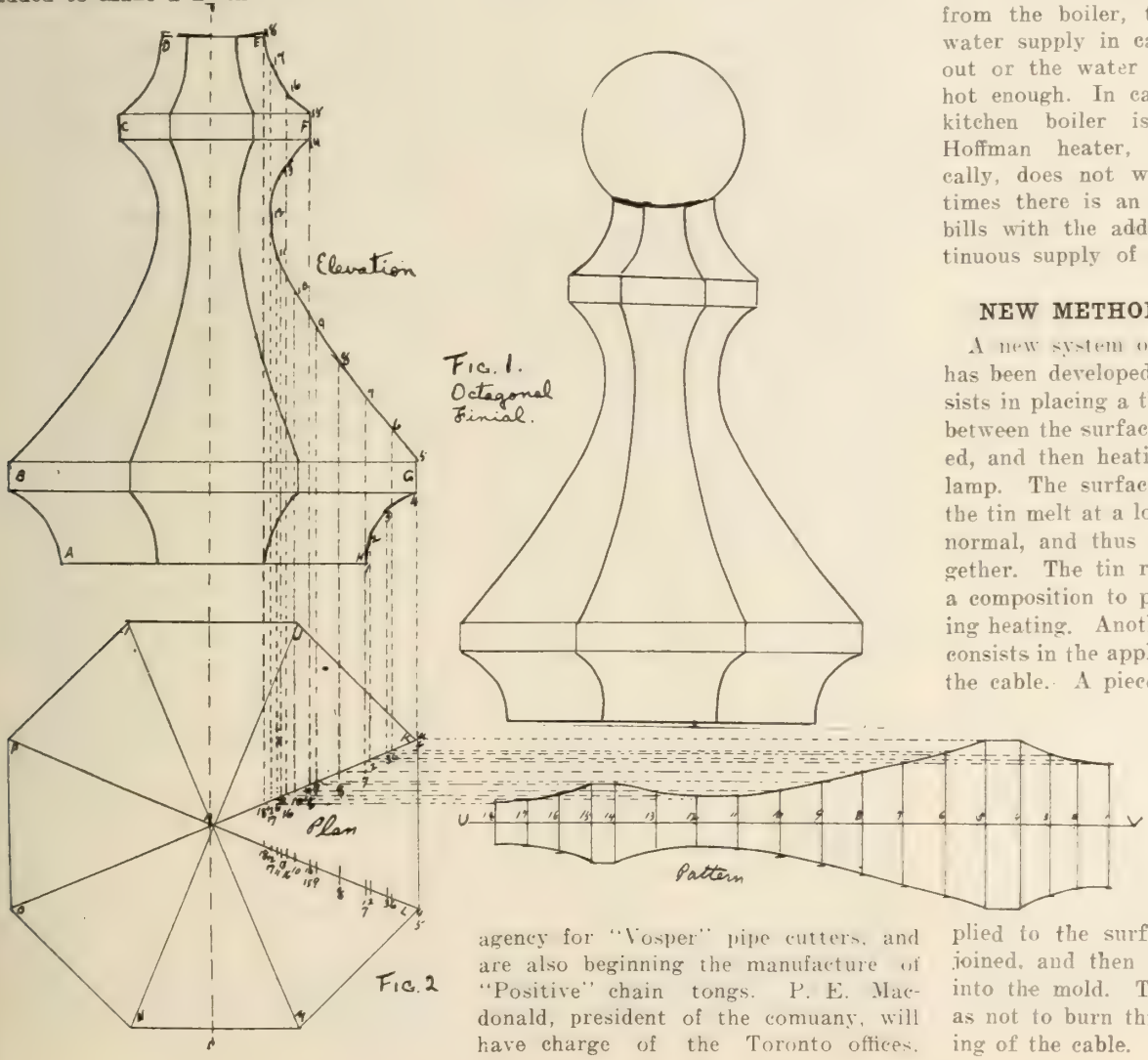


FIG. 2

ORGANIZING A NEW COMPANY.

An Ontario charter has been granted to Wm. Jno. Miller, Hamilton, and Alb. E. Somerville, Thos. Rich (plumber), Ben. Noble (steamfitter), and Hugh J. Carroll (brass finisher), London, to manufacture and to carry on a general plumbers' supply, brass and iron foundry and woodworking business in all its branches, and to acquire as a going concern the plumbers' supply business of the Labatt Mfg. Co., London, under the corporate name of Miller, Limited; the capital of the company is to be $70,000, and the head office will be at London. The provisional directors will be those named above. It is the intention of the company to begin manufacturing in a few weeks When working at capacity the factory will give employment to between 75 and 100 men.

NOW LOCATED AT TORONTO.

Macdonald & Sons, Limited, have purchased the business of Bush & Macdonald, Montreal, and have transferred the business from Montreal to Toronto where splendid premises have been secured at 109 Church Street, just south of Queen. Besides controlling the sales of "Toledo" and "Jardine" pipe threading tools the firm have the Canadian agency for "Vosper" pipe cutters, and are also beginning the manufacture of "Positive" chain tongs. P. E. Macdonald, president of the comuany, will have charge of the Toronto offices, while his sons, C. C. and A. L., will push sales in the territory between Kingston and Port Arthur. A fine display room is being prepared on the ground floor of the new premises, the basement being used for manufacturing and storage purposes, and the second floor for offices.

FIG. 1. Octagonal Finial.

HOFFMAN WATER HEATERS.

The Hoffman Heater Co., Lorain, Ohio, makers of instantaneous automatic gas water heaters, tank heaters, storage heaters and thermostatic valves, have issued a booklet descriptive of their gas water heaters. These heaters are made for the use of either artificial or natural gas and may be had in all sizes. The claim is made for them that they are "ever ready," and that scalding hot water may be obtained at any time from every hot water faucet in the house. Being automatic the gas supply is shut off when the temperature of the water reaches the degree set. One of the special features of the Hoffman is the "reheating" system which may be used in connection with the kitchen boiler heated by a coal range. This system acting as an adjunct adds more heat to the water as it passes through the heater from the boiler, thus ensuring a hot water supply in case the range fire is out or the water in the boiler is not hot enough. In case the water in the kitchen boiler is sufficiently hot the Hoffman heater, controlled automatically, does not work, so that at all times there is an economy in the gas bills with the added comfort of a continuous supply of scalding hot water.

NEW METHOD OF JOINTING.

A new system of jointing lead cables has been developed in England. It consists in placing a thin ribbon of pure tin between the surfaces that are to be joined, and then heating them with a blow lamp. The surfaces in the presence of the tin melt at a lower temperature than normal, and thus they are soldered together. The tin ribbon is treated with a composition to prevent oxidation during heating. Another system of jointing consists in the application of a mold over the cable. A piece of tin ribbon is applied to the surfaces which are to be joined, and then molten lead is poured into the mold. The flow is so directed as not to burn through the lead sheathing of the cable.

New Buildings, Water and Sewerage Systems

Opportunities Offered by Municipalities and Private Enterprise for New Plumbing, Heating, Ventilating or Sanitary Systems—Work Being Undertaken in Every Section of the Dominion.

Municipal Undertakings.

Tenders are being called by Prince Albert for sewer extensions.

St. John, N.B., is calling for tenders until May 31 for water pipe and sewer excavation and sewer and water pipe supplies.

A by-law to expend $55,000 on the Ingersoll, Ont., waterworks was carried by the ratepayers.

Tenders are being called until June 6 for the construction of sewage disposal works at Regina.

A by-law will be submitted to Peterboro ratepayers to raise $30,000 for sewage and drainage purposes.

J. F. Connelly, Toronto, has secured the contract for building sewers in Bridgeburg, Ont., his price being $23,000.

The city engineer of St. John has been authorized to expend some $38,000 in the renewal of water mains about that city.

Bridgeburg, Ont., council awarded the contract for the new sewers and septic tanks to John F. Connolly, Toronto, at $23,700.

The La Tuque, Que., council will shortly call for tenders for the construction of a waterworks system. Estimated cost, $300,000.

Tenders are being received until May 30 for the construction of storm water and sanitary trunk sewers and disposal works at Regina.

The Montreal city road department has awarded the contract for the construction of the Rosemount eastern main sewer to M. Dineen, at $37,000.

The Private Bills Committee of the Quebec Legislature has authorized Montreal to borrow $5,000,000 for the establishment of a filtration plant.

The Strathcona city council will engage Engineer A. C. Potter, of New York, to look over and make recommendations for the best sewerage system for that city.

Tenders addressed to the chairman of the Ottawa Waterworks Committee will be received until May 31 for the supply and delivery of ten 42 inch cast iron flexible joints.

The Vancouver Board of Works have decided on a general sewerage scheme for Mount Pleasant and Fairview. The work will cost over $100,000, and tenders will be called for shortly.

John Wagner, Cleveland, was awarded the contract for the construction of the high level interceptor sewer at Toronto, in connection with the trunk sewer, at $31 per lineal foot, and Ryan & Reilly, Philadelphia, were given the contract for the construction of the trunk sewer syphon at the Don river at $46,000.

Public Buildings.

A new school will be erected at Headingly, Man.

Plans are being prepared for a new theatre at Victoria to cost $85,000.

The Montreal Protestant School Board will build a school, to cost $80,000.

The Catholics of Fredericton will build a new school house, to cost $30,000.

The town authorities of Humboldt, Sask., are having plans prepared for a town hall.

Monro & Lailey are calling for tenders for the erection of the hospital at Prince Rupert, B.C.

The Vancouver Exhibition Association have decided to erect a new Machinery Hall to cost $20,000.

A home and school for the Hebrew orphan children will be erected at Montreal to cost $50,000.

The Toronto Board of Education will build a three-storey school on Kimberley Ave., to cost $35,000.

The Saskatoon school board have decided to issue $62,000 debentures and build a new school.

An armory, costing $100,000, and a Carnegie library, costing $40,000, will be erected at Port Arthur.

A permit has been issued to Yonge Street Methodist Church, Toronto, for a new edifice to cost $45,000.

The ratepayers of East Kildonan, Man., authorized the erection of new school buildings to cost $11,000.

A by-law to raise $175,000 for a general hospital at Edmonton will be submitted to the people shortly.

St. John's Cathedral, Winnipeg, is to be replaced at once with a new stone building, at a total cost of $200,000.

The contract for the new Roman Catholic Church at Orillia, has been let to John Bogue, of Peterboro, at $50,000.

The contract for the erection of the new Knox Presbyterian Church at Brandon has been awarded to John Forbes.

For the new Caswell Hill school at Saskatoon the contract has been let to Shannon Bros. & Cassidy, at $37,973.

City Engineer Murdoch, of St. John, N.B., has estimated the cost of a new incinerator plant from $50,000 to $100,000.

Competitive working sketches are being called until May 28 for a 4-roomed brick public school to be erected at Midland.

The London city council and the Middlesex county council are considering the erection of a joint city hall and court house.

David Stevid, of Chesley, has been awarded the contract for the new high school building to be eerected at Flesherton, Ont.

Gauthier & Daoust are preparing plans for a large new college building to be erected at Outremount, Que., for the Jesuit Order.

Morton Fulton has been awarded the contract for the erection of a $20,000 addition to the general hospital at Medicine Hat.

Tenders addressed to E. Hepworth, secretary-treasurer, Shoal Lake, Man., will be received until June 1 for the erection of a new school house.

Tenders will shortly be asked for the construction of a three-storey brick extension for the Patronage of St. Vincent de Paul at St. Hyacinthe, Que.

The City of Montreal will construct four public lavatories at various points throughout the city. The board of control will order plans to be made shortly.

The B.C. Government are looking for sites for a border line isolation hospital to be erected in the vicinity of Phoenix. Another such hospital will be located at or near Kamloops.

The contracts for the addition to the King Edward school, Toronto, have been let to Secord & Son, at $17,400, and for the additions at Ryerson school, to James Faulkner at $12,460. These contracts are exclusive of heating and extras, which will be awarded later.

General Buildings.

Dyment & Duffield will build a store at Montreal to cost $12,000.

Lee Chong & Co. will erect a building at Victoria to cost $4,000.

A $20,000 annex will be erected to the Dyke block at Fort William.

M. Martin will build an apartment house at London to cost $8,500.

Martineau & Son, will erect seven buildings at Montreal, to cost $21,000.

The Y.M.C.A. will erect a building at Port Arthur to cost $40,000.

The Bell Telephone Co. will erect a new building at Owen Sound.

W. H. Westman and the C.M.B.A., of Chatham, Ont., will erect a new $20,000 block.

The Willis Piano Co. will erect a new office building at Montreal to cost $100,000.

The Regent Apartments Co. will build a $330,000 apartment block at Winnipeg.

Sol. Cameron will build a five-storey hotel of steel and concrete at Prince Rupert.

The Congregation of St. Paul's Presbyterian church, Toronto, will build a stone manse.

Alvo Von Alvensleber, German Consul, at Victoria, will erect at Sooke, B.C., a large hotel.

The National A.A.A. are considering the purchase of grounds at Montreal to erect a club house.

The Urban Mutual Insurance Co. will erect a business block at Portage la Prairie to cost $3,000.

The Assiniboine Lawn Bowling Club, Winnipeg, will erect a club house at an estimated cost of $3,000.

The contract for the two fire stations at Winnipeg has been let to John Saul, Total cost, $38,975.

A building permit was issued to John Peachy, Brantford, for the erection of a new block of stores and apartments, at a cost of $8,700.

J. Henry and Alex. Hendrie have taken out a permit to erect a four-storey apartment house at Toronto, to cost $38,000.

W. E. Noffke, architect, is preparing plans for an 8-storey office building at Ottawa, to be erected for James Hope & Sons.

The contract for the large extensions to the C. P. R. freight sheds at Moose Jaw has been awarded to the Carter, Halls, Aldinger Co.

Contracts for the Dominion Bank and the National Trust blocks to be erected at Edmonton were awarded to Claydon Bros., of Winnipeg.

Plans have been adopted for the new parsonage for the congregation of Queen's Avenue Methodist Church, New Westminster, to cost $6,000.

Permits were issued to the Central Mission, Vancouver, for a six-storey block, to cost $75,000; also to the Salvation Army for a servants' home $7,000.

A building permit has been issued to John Peachey for the erection of a new block of stores at Brantford, with residence overhead, at a cost of $8,700.

Recent building permits at Ottawa include. J. McFarlane, five dwellings, $6,000; Wm. P. Davis, alterations to dwelling, $15,000; Eugene Fiset, dwelling, $8,000.

Regina ratepayers have given a mandate to the city council to immediately proceed with the construction of a street railway, to be operated by the municipality.

Tenders will be received until May 28 for all trades required in the erection of a steel constructed, fireproof warehouse building for Hobberlin Bros. & Co., Toronto.

The Toronto Construction Co. has been awarded the contract for the construction of the C.P.R. from Coldwater to Atherly Junction. The contract will run into about half a million dollars.

Recent building permits at Montreal include: Geo. Hall Coal Co., elevator, $9,000; Bloomfield Bros., four stores, $9,500; F. J. Bissaillon, nine dwellings, $20,000; Jos. Lanctot, three dwellings, $10,000; H. Plante & Co., twelve dwellings, $12,000.

Recent building permits at Vancouver include: The Western Club house, $55,000; J. S. Keffington, house, $5,200; Dr. Wilson, dwelling, $7,750; F. D. McKay, apartment house, $10,000; W. A. Clarke, business block, $50,000; Martin Robertson and John Burns, warehouse, $40,000.

Recent building permits issued at Toronto include: A. H. Garrett, three stores and dwellings, $12,000; Gold Medal Mfg. Co., six pair dwellings, $30,000; Jas. Henderson, 3 stores and dwellings, $11,000; W. S. Grimshaw, 4 stores and dwellings, $14,000; Amos Schunk, apart., $20,000; C. M. Bryan, 3 dwellings, $13,000; R. A. Shields, five dwellings, $10,000; E. R. Rogers, dwelling, $10,000; J. S. A. Whealey, 5 dwellings, $14,000.

Recent building permits at Winnipeg include: W. Moxam, apartment block, $50,000; the Logberg Printing Co., an apartment and stores building, $35,000; Arni Eggertson, three houses, $13,500; Arni Eggertson, two houses, $6,000; H. Haldorson, dwelling, $5,000; Dunn & Wallace, house, $5,000; Taylor Webb, house, $11,000; Albert Johnson, apartment block, $45,000; Smith & Kirkpatrick, two houses, $9,200; H. Sandison, house, $5,000; J. Ryan, Jr., house, $10,000.

OZONE WATER PURIFICATION FAILS.

The report of the Provincial Board of Health on the Lindsay ozone water purification plant has been published, and the system is found wanting by the board. Experts were engaged to make the most thorough scientific tests and their reports, submitted in detail, set forth the points of failure as follows:

Leaking of the covers on the filters and pure water reservoir; leaking of the walls of the square filter; insufficient sand on the round filter; no means for drying the air to be ozonized; lack of power in the blower; no means for distributing the air evenly through the plates of the ozonizers; failure of the aspirators to draw into the water any but traces of the ozone produced, as shown by no physical changes in the ozonized water, no chemical changes in the ozonized water, very slight bacterial reduction in the ozonized water.

Dr. Geo. G. Nasmith, in his report, says: "From the evidence obtained by us I do not hesitate to say that the Howard-Bridge system, as installed at Lindsay, is an absolute failure, as far as purifying the water is concerned. From the mechanical standpoint of the means for carrying to and mixing the ozone with the water it is defective in every particular. With the knowledge that the ozone does not get into the water the bacterial and chemical results are self-evident, or from the reverse standpoint the bacterial and chemical results are an absolute indication that the ozone is not getting into the water. The system would achieve practically the same results with the ozonizers shut off or removed. The filters remove 30 per cent. of the bacteria and the ozonizers 8 per cent. more; a fairly good roughing filter should itself remove 40-50 per cent. of the bacteria.

"I deem it necessary to draw attention to the absolute diversity of these results and those of the report on which the system was accepted by the town. Six months ago colon bacilli were destroyed by the ozone every time; during our test not at all. At that time the filters removed 75.9 per cent. of the bacteria present in the raw water, while the ozone removed 84.4 per cent., giving a total reduction of 96.2 per cent. We obtained only 30 per cent. bacterial removal by the filters and 8 per cent. by the ozone, which gave a total reduction of only 35.78 per cent. The mechanism for mixing the ozone and water and the sand filters were exactly the same then as now, but the ozonizers are of double the capacity that they were last summer. One would expect the filters to still remove about the same number of bacteria, while the bacteria mortality due to ozone should be much higher. Under the circumstances it seems reasonable and justifiable to conclude that there must have been some other reason for the differences in the results."

NOVEL SYSTEM OF VENTILATION.

In their desire to secure a system of ventilation and heating as near perfect as possible, the architects of the Bath Club, of London, England, resorted to the use of electric radiators. The air is drawn through a duct by an electric fan, and passes over a series of the radiators, by which it is warmed without being dried or given any offensive odor. The warm air is passed into the rooms through the series of vertical slots in the frieze near the ceiling. These openings, collectively, give a large surface, and do not introduce any unsightly fixtures. Ventilation is secured without draughts, the velocity of the incoming warm air not exceeding one foot per second.

AIR WASHERS WIN APPROVAL.

The air washer has come to stay, if the views of the tuberculosis workers count for anything. A talk with representatives of associations striving to better the condition of the workman in factories, for example, brings out the fact that these people are acquainted with this type of air filter and consider it essential in all problems of satisfactory ventilation.

PLUMBING AND HEATING MARKETS

MONTREAL.

May 30.—Apart from an easing in lead pipe, the discount now being 30 instead of 25, there is no change in quotations on prominent lines. Although orders are very good, there is a slackening off in the pressure on the supply houses. This will last for a week or so, and then the second rush will come. It cannot be said that during this little breathing time that manufacturers will be able to get together much stock, because the report is now that present orders are taking all the time of the plants. Radiators and boilers are very active, while the general demand for soil pipe is excellent. Enamelware is also moving at quick rate.

Plumbers are generally active, and there is plenty of figuring on new work. There is still a boom on in residential buildings, and the permits for the city as well as outside smaller places are very heavy.

Soil Pipe—While for the time being the first rush is over, orders are coming in fast, and little stock is being accumulated. The call is expected to double up again in a few weeks. The markets are unchanged, and we quote light 60 off, heavy 70 and 10.

Lead Pipe—With a decline of 5 per cent. lead pipe and waste have been in active demand, there being some stimulation owing to the cut. It is anticipated that more stocking up will be done on present figures. Traps and bends are unchanged. We quote: Pipe and waste at 25 off; traps and bends, 50; calking lead, 5c per lb.

Solder.—Solder is unchanged, although there seems a slight weakness in the market. The demand is good and we quote half and half 20c, wiping 18½.

Iron Pipe.—The demand shows good strength, the call from outside points being very heavy. The market is unchanged, and we quote: ¼-in. black, 63; galvanized, 48; ⅜-in. black, 59; galvanized, 44; ½-in. black, 69; galvanized, 59; ¾ to 4-in. black, 71½; galvanized, 61½.

Radiators and Boilers.—A very active demand is in evidence, and manufacturers are hard pressed to turn out the lines in good time. Prices are unchanged, and we quote: Steam boilers 60 and 5; hot water boilers, 50 and 10; wall and hot water radiators, 50 and 7½; steam radiators, 50 and 7½ per cent.

Scrap Metal.—There has been changes in copper lines in sympathy with the weakness in the crude metal. There is a fair movement in iron but other lines are quiet. We quote: Heavy copper and wire is 11c; light copper bottoms, 9½c; heavy red brass, 8c; heavy yellow brass, 8c; light brass, 6c; tea lead, 2½c; heavy lead, 2¾c; scrap zinc, 3c; No. 1 wrought iron, $12; machinery cast scrap No. 1, $16; stove plate, $12.50; malleable, $9; miscellaneous steel, $5.

Metals.—The metals are unchanged with the exception of domestic lead which has been cut 10c per 100 lbs. We quote: Tin, 35c; copper, 13½c to 14c; imported lead, $3.75; domestic lead, $3.50; spelter, $5.75.

TORONTO.

May 31.—Very little change is reported in the plumbing supplies market from conditions prevailing during the past month. There has been during the week gone by a lessening of demand for soil pipe, but other pipe supplies are very busy, particularly large and heavy pipe for municipal work.

The demand for enamelware, which has been good ever since the month of February, has sprung forward during May and at present is very good. The record made a year ago will surely be beaten if sales for the rest of the season keep moving along at the present rate; but as from June to October is the best season for these goods a new high record is almost a foregone conclusion.

There are rumors of cutting in the prices af boilers and radiators, both in Toronto and east of this city, but manufacturers state that quotations remain at the old figures, and over that new concerns entering the field are quoting low to get business. Brass goods and plumbing supplies generally are decidedly firm, and some of these lines are expected to show advances before July 1.

Enamelware.—The movement of enamelware goods at present is very brisk, and the month just closing nas seen probably the best business for May in recent years. The demand, too, is increasing for the better grades of goods. Prices are firm at unchanged figures. Closet combinations are the most numerous in orders at present being received.

Soil Pipe—The call for soil pipe has tapered off somewhat since last issue, though there are orders sufficiently large and numerous to make the trade satisfactory. Stocks are still large. The market is firm and prices hold unchanged. Light pipe is 60 and 10 off; medium and heavy, 70 and 10, and 7 and 8 inch pipe, 50 per cent. Fittings are 70 and 10 off. There is a big call for the larger sizes of pipe for use in municipalities, especially in the west, where water, sewerage and gas systems are being installed.

Iron Pipe and Fittings.—Orders are yet heavy and the call for medium sizes is good. Quotations hold unchanged and firm. Malleable fittings discounts range from 37½ to 40 per cent., and cast iron fittings from 60 to 65 per cent. Standard bushings are 70 and malleable 65 per cent. Nipples are 75 and 10; headers, 60; and flanged and malleable-lipped unions, 65 per cent. Galvanized pipe (1-inch) is $6.35 per hundred feet, and black pipe (same size) is $4.70.

Lead Pipe—The easy feeling in the lead market still obtains, and the low quotation of 30 off quoted a fortnight ago, continues to rule the market. Traps and bends are at 50 per cent. Calking lead ranges from 4½c to 4¾c a pound.

Solder—Good trading continues with stocks very large. Prices are unchanged. Half-and-half runs from 18½c to 20c a pound, and wiping solder, 17c to 18½c a pound.

Brass Goods—Steam, locomotive and marine goods are calling for supplies which keep brass manufacturers exceedingly busy. Some of them are working their plants and staffs into the night. Prices hold fairly firm. Brass fittings and supplies for municipal undertakings are active. High-grade compression work is 60 per cent.; medium, 65; and standard, 70 per cent. Fuller work is also at 70 per cent.

Boilers and Radiators—Quotations continue to be set at the figures ruling during the past several months, but there are rumors that cutting is being indulged in in the city and outside. The breaking-in of new interests is said to be responsible. The greatest discount offered is set at 70 for hot water boilers and radiators, but the older concerns are still quoting 50 and 10, preferring to let business go by rather than go below this and lose money as they say.

Metals—Tin, 35½c; copper, 14c; lead, $3.75 (dom.) and $3.85 (imp.) per hundred pounds.

Old Metals—Lead, 2½c; zinc, 3½c; copper, 10c (about); iron ½c.

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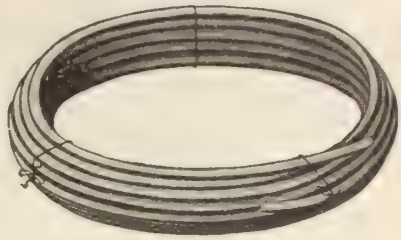
Macdonald & Sons, Ltd., 109 Church Street, Toronto, are just beginning the manufacture of the "Positive" pipe wrench, which is a combination fitting and pipe wrench, particularly adapted for close work. The jaw swings of its own weight, this affording a perfect ratchet action, and making a compound leverage wrench, while throwing the stress equally on all parts of the wrench, and not all on the jaw, thus ensuring a long life tool. This wrench is made of drop forged steel, making it as strong as a wrench can possibly be made. Circulars describing the wrench are now being printed and will be mailed to any applicant.

PLUMBERS



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Plumber and Steamfitter receives, from time to time, enquiries for the names of manufacturers of various lines. These enquiries come from firms who usually intimate they have looked through Plumber and Stamfitter but cannot find any firm advertising the line in question. In many cases these firms are anxious to secure the information at once. This page enables manufacturers to keep constantly before the trade lines which it would not pay to advertise in larger space.

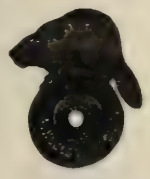
ELECTRIC DRY BATTERIES.

X CELLS are the only Dry Cells which show NINE LIVES.

You'll make money in handling them. All standard sizes.

Electrical Specialties, Limited
TORONTO

EMERY WHEELS.



Canadian Hart Wheels
442 Barton St. East, Hamilton

Corundum and Emery Wheels
Grinding Machines, Beaver Oil Stones.

FILTERS.

Anti-Splash Tap Filters
The "Galvo" Filter and Water Steriliser
"Perfection" Fire Extinguishers
There's good money in them for hardware dealers.
Write for Prices.
The Anti-Splash Filter Co.
OWEN SOUND - - ONTARIO

MANUFACTURERS' AGENTS.

The Manufacturers Sales Co.
MONTREAL
Frederick H. Reid, Manager
Representing manufacturers of high-class specialties, including "Handibook," "So-Clean," and others.
We are open at any time to receive propositions from first-class manufacturers who wish to be represented in Canada. Write at once. Best of references.

CLARE, LITTLE & CO.
WESTERN DISTRIBUTORS
Wholesale Commission Merchants and Manufacturers' Agents. Cars Distributed, Warehoused and Forwarded. Warehouse on Transfer Track. Business solicited.
OUR POSITION IS YOUR OPPORTUNITY
SASKATOON, WESTERN CANADA

METAL PRODUCTS.

Established 1880
NEITHER FICTITIOUS NOR EXORBITANT
ORDER AND USE
LANGWELL'S BABBITT
GEORGE LANGWELL & SON, Makers, MONTREAL

EMERY WHEELS.

Will Hold Up a Shelf

That's what a shelf bracket's for. For this purpose there can be NOTHING BETTER, NOTHING CHEAPER than the BRADLEY STEEL BRACKET. It is well Japanned, Strong and Light. The saving on freight is a good profit aside from the lower price at which the goods are sold. Order direct or through your jobbers.

ATLAS MFG. CO., NEW HAVEN

BRONZE POWDERS
BRONZE LIQUIDS

The Canadian Bronze Powder Works
Montreal Toronto
Works, Valleyfield

Send us your orders and we guarantee the quality

"Always Reliable"
Gasoline Combination Blow Torches
(Patent Applied for)
furnished with our adjustable soldering iron holders which can easily be removed when not required, and has and advantage over old style stationary kind which are often in the way. Also has our "never leak" pump, plunger of which screws down. Made in two sizes, pints and quarts, with or without the soldering iron holded either round or flat shaped tanks. Can be obtained from any jobbing house in Canada.
OTTO BERNZ, 13th St, Newark, N.J.

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Ventilators and Chimney Cowls
My patent rotary ventilator is backed by a guarantee. It is the best ventilator on the market. Write for particulars, handsome booklets of testimonials and information mailed free.
GEO. D. PEARSON & CO.
Office and Works
17 Pontiac St. - Montreal

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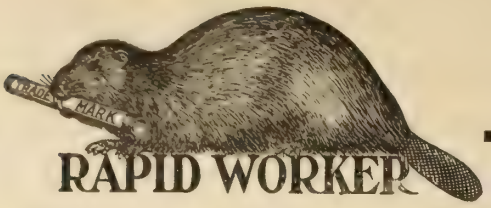
INVESTIGATION

Get in line and let us prove to you that the

GENUINE
Armstrong Stocks and Dies
ARE THE BEST.

Catalogue on request.

The Armstrong Mfg. Co.
317 Knowlton St.
Bridgeport - Conn.

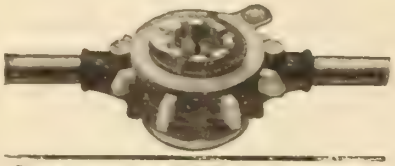


RAPID WORKER

One man with a Beaver Die Stock is worth two or three men with any other Die Stock made.

"Beaver" Adjustable Die Stocks

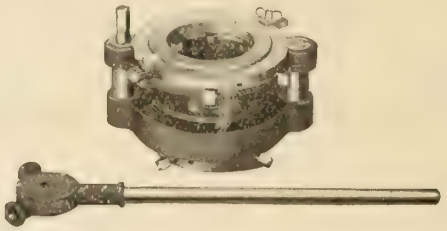
No loose Bushings or loose Dies on these two tools and they cut ¼, ⅜, ½, ¾, 1, 1¼, 1½, 1¾ and 2 inch pipe.



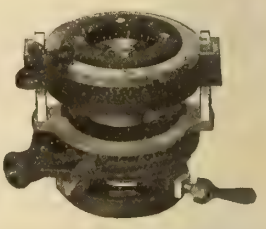
No. 6, threading ¼, ⅜, ½, ¾ inch, complete

have cut the cost of pipe threading in two because they will thread all sizes of pipe without changing dies. They are built on the receding principle which positively enables one man to thread any size of pipe and produce absolutely tight joints for all work, including hot water. They save the time formerly used up in changing dies and looking after loose parts and eliminate all of thread-stripping when backing off.

No. 25A, threading 1, 1¼, 1½, 2 inch pipe. A boy can operate it.

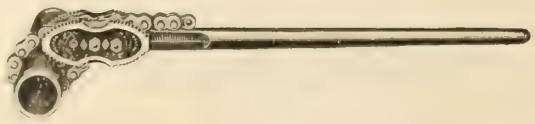


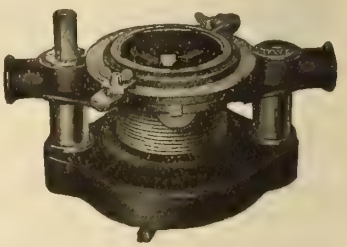
No. 60. Uses two sets of dies. One set cuts 2½, 3, 3½ in.; the other cuts 4, 4½, 5, 6 in.; they are inserted without removing any parts.



No. 26A. Cuts 1, 1¼, 1½ and 2 in. pipe. A boy can operate this tool.

Pipe Vise. Takes pipe 1 to 4 inch.





No. 41. Cuts 2½, 3, 3½ and 4 inch pipe.

THE WARREN ADJUSTABLE DIE STOCK

With Non-receding Dies.

Made in FOUR Different Sizes.

Each size cutting two sizes of pipe without changing dies.

A strong, durable tool, threading two sizes of pipe without changing dies. Particularly recommended for those who want a Die Stock of just the required size and weight for two sizes of pipe.

NET PRICES TO CONSUMERS:—

No. 120, [illegible] in. - [illegible] in.	$5.00.	Extra Dies, cutting two sizes each (also ⅛), Right or Left	$1.50
No. 121, ½ in. - ¾ in.	5.50.	" " " " " Right or Left	1.60
No. 122, 1 in. - 1¼ in.	6.00.	" " " " " " "	2.00
No. 123, 1½ in. - 2 in.	7.00.	" " " " " " "	2.06

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BORDEN CANADIAN COMPANY, 66 Richmond St. East, Toronto, Ontario.

Plumbers and Steamfitters

THROUGHOUT CANADA

will find it to their interest to buy their supplies from the oldest and one of the largest firms doing business in the Dominion.

Our stock of Baths, Lavatories, Sinks and Closets is very large at all times and your orders to be shipped either from stock or Works will receive prompt attention.

Write for our latest prices; they will interest you.

Wm. Stairs, Son & Morrow, Limited

1810 HALIFAX, N.S. 1910

Eastern Canada Supply House.

Will You Partner With Us in Radiators?

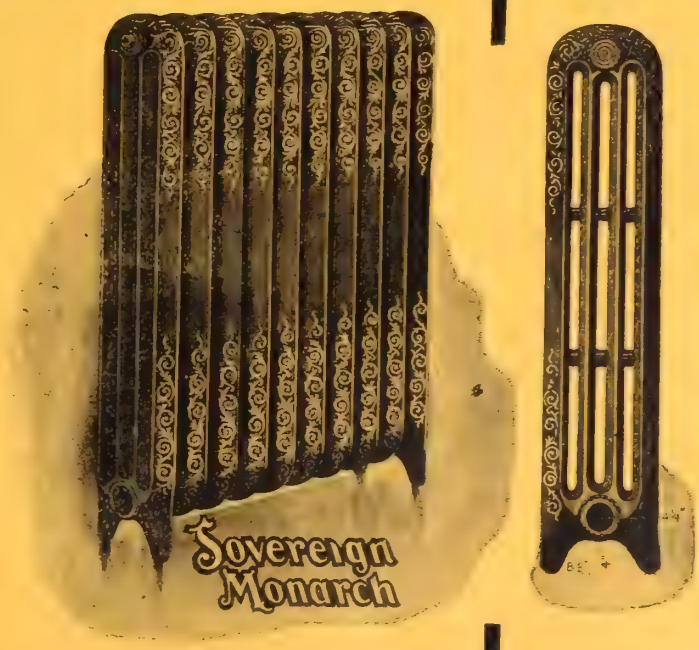
Recommend and instal the

"SOVEREIGN" RADIATOR

It is made in a large number of designs, and fits handily into any vacant spot in store, office or home.

Your reputation is at stake when you instal a modern heating plant. See that the reflection is all you could desire by installing the "Sovereign" —the radiator that always makes good!

Send for booklet and particulars.



Taylor - Forbes Co., Ltd.

Head Office and Works: Guelph, Ont.

TORONTO 1088 King Street W. MONTREAL—246 Craig Street W. WINNIPEG—The Vulcan Iron Works, Ltd. ST. JOHN, N.B.—H. G. Rodgers, 53½ Dock St. QUEBEC, QUE.—The Mechanics Supply Company. VANCOUVER, B.C.—Taylor-Forbes Co., Ltd., 340 Pender Street. CALGARY—The Barnes Co., Limited.

Plate F
199

The Standard Ideal Company Ltd.

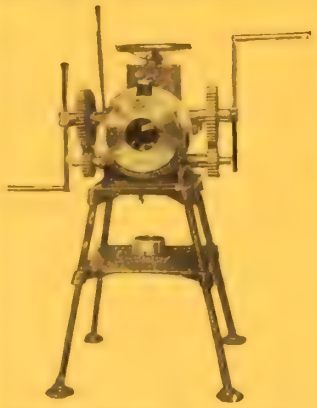
Dimensions Lavatory 18 x 21" Oval Bowl 11" x 14" Back 8"

We have a large number of other styles including many new designs to select from--For which see our catalogue F now ready for distribution.

We are also manufacturers of full lines of Bath Tubs, Shower Baths, Lavatories, Sinks, Laundry Trays, Wash Sinks, Range Closets, and Urinals, etc., etc.

Head Office and Factories, Port Hope, Ontario

Branch Offices and Sample Rooms:
Toronto, 50 Colborne Street; Montreal, 128 West Craig St.: Winnipeg, 154 Lombard St.



Loew Victor Pipe Machine

completely covers the needs of the plumbing and heating contractor in pipe threading.

Its usefulness in this field is of the widest, and the returns from the money invested will soon exceed the original amount.

Let us tell you just what the Loew Victor will do for you

Write.....

The Loew Manufacturing Co.
CLEVELAND, OHIO

Agents for Ontario and Western Canada, The General Supply Co., Ltd., 219 Bank St., Ottawa, O

Progressive Fitters

Will Tell You That They Use

DART UNIONS

If you require a tight joint and one that will always be tight, there is nothing quite equal to the DART UNION, and they are most economical.

Your jobber can supply you —if not we will.

Dart Union Co., Limited
Manufacturers Toronto

PLUMBER & STEAMFITTER

and Sanitary Engineer of Canada

THE MACLEAN PUBLISHING COMPANY, LIMITED, PUBLISHERS

MONTREAL, 701-702 Eastern Townships Bank Bldg. TORONTO, 111-127 University Avenue WINNIPEG, 511 Union Bank Bldg
LONDON, ENG., 88 Fleet St. E.C. NEW YORK, Rooms 1109-1111, 160 Broadway

Vol. IV, No. 6 (New Series). Publication Office : TORONTO, JUNE 15, 1910. Old Series, Vol. XXII. No. 12

Architects, Builders or Steamfitters?

Which one of these three classes has the most influence in selecting the make of boilers, radiators, soil pipe, brass goods, enamelled ware and other goods installed by plumbers and fitters in any new houses which are being built?

A prominent steamfitter in Canada stated recently that two years ago he had handled one make of boilers and installed them during 1908, to the exclusion of all other lines. He had some trouble with this manufacturer and in 1909 decided to recommend another make of boilers, with the result that during the whole season of 1909 only two boilers of the kind he had handled exclusively the preceding year were installed by him.

With two exceptions he had switched every order.

This proves conclusively that the plumber and steamfitter has sufficient influence in the majority of cases to instal whatever make of goods he thinks best. This is as it should be, for when a plumber or fitter undertakes a heating job, or any other work, he takes the responsibility for it giving satisfaction, and builders and owners will usually, therefore, give him a good deal of latitude in the selection of the various brands.

The most economical method for manufacturers and jobbers to reach the plumbing and steamfitting trade throughout Canada and acquaint them with the merits of their goods and the facilities they have for supplying their wants promptly is through the advertising columns of PLUMBER AND STEAMFITTER.

For full information regarding rates write.

Plumber and Steamfitter

and Sanitary Engineer

MONTREAL TORONTO WINNIPEG

Beaver Brand

Cast Iron Enamel Ware

Famed for its Smoothness, Colour and Wear

This Cut Illustrates Our

Beaver Brand Roll Rim Sink

This is one of our leading and best known lines, which has given satisfaction throughout the Dominion. Our new and up-to-date plant is unrivalled for the production of Bath Tubs, Slop Sinks, Kitchen Sinks, Laundry Tubs, Lavatories, Closets, etc. Customers can rely on having their orders promptly filled. Every article of "BEAVER BRAND" manufacture is guaranteed.

Amherst Foundry Co., Ltd., Amherst, N.S.

ONTARIO SALES AGENT:

MONARCH BRASS MFG. CO., LTD., 178-180 Victoria Street, TORONTO

MARITIME PROVINCES	MONTREAL, P.Q.	WINNIPEG, MAN.	VANCOUVER, B.C.
All Jobbing Houses	All Jobbing Houses	E. B. Plewes, 120 Lombard St.	A. O. Campbell

THERE'S A BIG DEMAND

for Reliable Water Service Systems in every place that lacks municipal waterworks. You can supply that demand with good profit to yourself and absolute satisfaction to your customers by selling

Peerless Water Service Systems

Peerless Systems are so simple in construction and so reliable in operation that architects everywhere are specifying them.

Why wait until your opposition has the "stand in"?

Get busy now and investigate Peerless Systems.

Commence by writing us for Catalog and full particulars.

National Equipment Company, Limited

Lombard Street

TORONTO - ONTARIO

Power System—Hard and Soft Water

Canada's Largest

TANK

Manufacturers

There's No THE CROWN **Experiment!**

Nothing that care, skill and the right selection of materials can suggest has been omitted in the manufacture of "CROWN" LAUNDRY GOODS.

We guarantee them to stand the severest test and closest scrutiny. If you are interested, write for prices.

SEND FOR CATALOGUE.

H. C. Bedlington & Co.

223 Adelaide St. West, TORONTO

SUPPLY

"Kerr" Radiator Valves

on your heating work, and your valve troubles are over

We charge the price and furnish the reliable goods

The

Kerr Engine Co., Limited

Look for Our Name "KERR" on All Genuine KERR VALVES

Walkerville - Ontario

"VULCAN BIJAWS"

The climax of 30 years' manufacturing and selling experience in Chain Pipe Tools.

BECAUSE in the reversible jaws—readily changed when teeth first in use wear—you get the service of two tools at the price of one.

BECAUSE of the fastening of jaws to handle with two bolts the full strength of tool is provided for in one, and the other may be used as an emergency bolt, and repairs may be made while at work in case of accidents.

BECAUSE the bite of teeth is a distributed pressure and does not tend to crush pipe; no pipe-tearing or jaw-wearing strain on "straight-cut" teeth

BECAUSE every part of tool is fully guaranteed and interchangeable. No tools similarly made ever approached the "Vulcan" class of Chain Pipe Tools in strength or utility.

Free catalogue and "V-B" rule for a postal

J. H. Williams & Co., 77 Richards St. Brooklyn, New York

Diamond Brand

UNIONS

Prompt Shipment
Complete Assortment

Stocked by leading wholesalers

Manufactured by

Fittings Limited

Eastern Warehouse
MONTREAL, QUE. OSHAWA, ONT.

Empress Self-closing Work

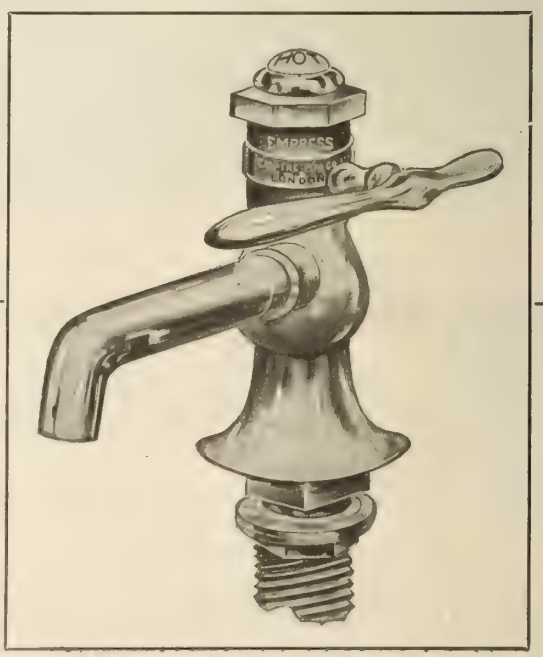
is the ONLY satisfactory Self-closing Work for use in Hotels and Public Buildings.

Large numbers in use in Montreal and on the Pacific Coast.

Empire Closets and Brass Goods with our name on are unconditionally guaranteed.

WOODWORK INCLUDED

EMPIRE MFG. CO., Limited, LONDON, CAN.



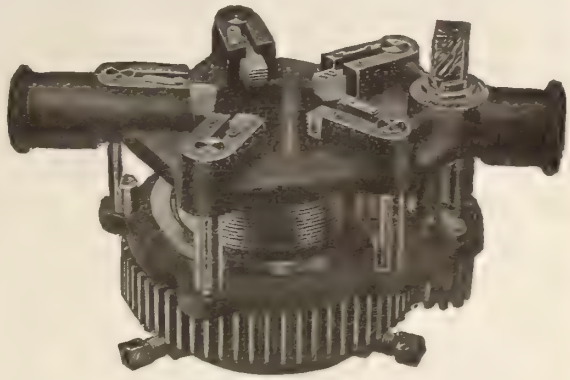
"Toledo & Jardine"— "The Threaders that Thread"

"Vosper Pipe Cutters"— "The Cutters that Cut"

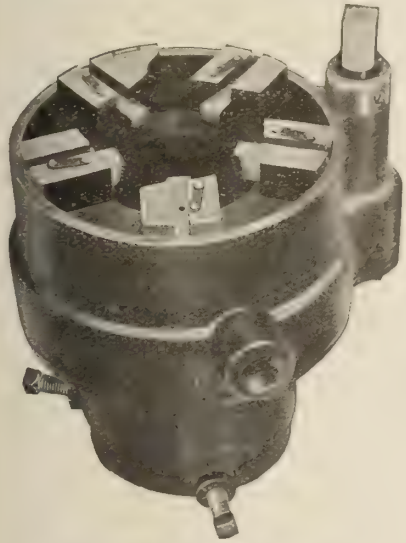
"Positive Chain Tongs"— "The Tongs that Grip"

PIPE TOOLS

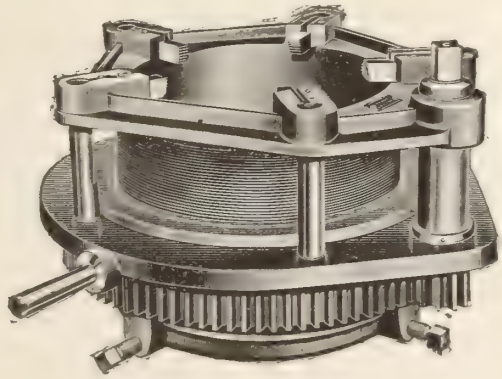
No. 11R "JARDINE"
Capacity 1 in. to 2 in. Right and Left, Combination Ratchet Hand Stock.



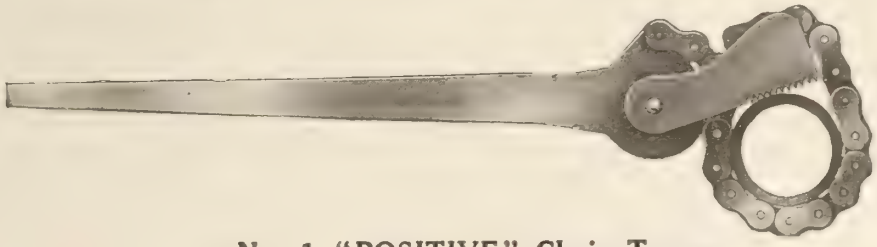
No. 2 "TOLEDO"
Capacity 2½ in. to 4 in



No. 22 "JARDINE"
Capacity 2½ in. to 4 in.



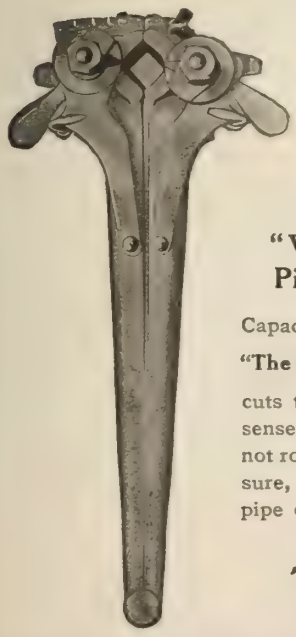
No. 3 "TOLEDO"
Capacity 4½ in. to 8 in.



No. 1 "POSITIVE" Chain Tongs

Capacity ¾ in. to 2½ in.

"POSITIVE" Tongs Grip both Pipe and Fittings. The Jaw drops with its own weight, bringing into play a ratchet motion. The Tongs for close work. The Tongs you pull down on as well as pulling up. Grips Galvanized Pipe and Fittings the same as Black. The Best Tongs yet made. Try them and note their superiority.



No. 1 "VOSPER" Pipe Cutter.

Capacity ½ in. to 2 in.

"The Cutter that Cuts"

cuts the pipe in every sense of the word, does not roll it under pressure, no more split pipe or reaming.

For Sale by all Jobbers.

TORONTO, MACDONALD & SONS LIMITED ONT.

Plumber and Steamfitter

and Sanitary Engineer of Canada

Published on the 1st and 15th of each month by
THE MACLEAN PUBLISHING COMPANY, LIMITED
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Circulating amongst Plumbers, Steam, Hot Water and Gas Fitters, Sanitary Inspectors, Heating and Ventilating Engineers, City Engineers, Boards of Health, Architects, etc.

TORONTO, JUNE 15, 1910

THE PLUMBER OF THE FUTURE.

By Chas. H. Denison.

The plumber of the future will be a man built upon much broader lines than the one who holds down a job in the business to-day. It would not be a wild guess to suggest that there might be a great many of the 'gentle sex'' engaged in the business in time to come. There are several ladies running plumbing shops in the United States already, and I must confess that they are mighty well liked and successful. No spider webs on their show windows and a good clean stock on exhibition.

This is only another proof of what I have frequently stated, and that is, that the shop and the business are two entirely separate propositions. In the past the apprentice (except in unusual cases) has developed into the reflection of his mater.

How many plumbers do you suppose have ever reflected that there were others to come after them? How many have taken a great pride in the thought that after they had passed in their checks the business would continue and perhaps do even better than when they were at the helm?

Sometimes the writer of these lines has been criticized when he has written certain articles, the party saying ''why we knew that years ago, it's nothing new.'' To such remarks I have this to say. Why didn't you tell some one about it years ago? Simply because that you were afraid that somebody would get an idea that you possessed, that was it. Well the trade papers and the many trade schools have scattered the general information well, and it's not held in the minds of a few now-a-days.

The selfishness in the matter of instruction has been one of the things which has boomed all these schools. If the shop will not give instructions why the seeker can find it somewhere else.

Now the plumber of the future will not have any ''after us the deluge'' sentiment in his make up at all. He will have more education, consequently better judgment. Larger matters than the mere bossing of the shop will occupy his attention and consume his time. As it is to-day there are many shops bothered by workmen of the most inferior type. This is the result of the poor (or perhaps selfish) system of instruction that has been used in the past.

There are going to be good workmen, and plenty of them too, in the future for the simple reason (if no other), that they will be compelled to measure up to a certain standard, which will be set by some higher power than a mere shop boss, or the examining board of some local union. No reflections are intended on either of the aforesaid parties, but the future examinations will be better graded, more uniform, and the workmen will have to approach a well recognized standard with a creditable standing.

I said that the master's time would be occupied with larger matters, as his end of the game will have received a boost. We congratulate ourselves that we have made great progress in the past quarter of a century. Why the business is just in its infancy, so to speak. Observe the gigantic buildings that are being erected ,and the means that are taken to light, heat and ''plumb'' them.

A few years ago what is now accomplished would have been considered totally impossible, and to-day we can heat buildings of any height by hot water. That is not a missprint either. I expect to live to see well established lines of flying ships plying through the air and heated in the most scientific manner, while the plumbing is of a somewhat different character. Perhaps the sanitary question may be handled in an entirely different manner. Who knows or is prepared to assert that we of the Twentieth Century have arrived at anywhere near the best solution in regard to such matters?

When I remarked a short way back that the master would have more education, I hope that no one will mistake my meaning. I did not mean to insinuate that he would have to have what we term a college education. As that particular kind of instruction sometimes pans out it would only cumber up the master's mind with a lot of material for which he could find no use. By education I mean a real insight in the affairs of life, a working knowledge of the game that will enable him to hold his own with any man, and a comprehension of the situation that places him where he does not have to depend on any doctor or some professor, for the main points of his own game.

Jolly situation, isn't it, when some college sharp can sit behind a desk and tell us, sure, just how these things in our business can be made to come out to a T. I know one who has figured out some problems, and they dotted all over with X's and Y's and ''square roots'' too numerous to mention. This party jumped my clearing one day and told me that I had yet to learn the first steps in the game. I said ''Perhaps? But where did you ever get any practical knowledge of the craft?'' What do you suppose he said? Why that he once worked a few months in the repair shops of a certain railroad. From that he concluded that he knew enough to give us some points on how steam should be figured. You readily perceive how soon we separated from any affection for each other.

The plumber of the future will be a responsible, tolerant, educated individual, who has no time for the petty meanesses, jealousy and selfishness, which characterise so many who are in the business and craft to-day. He will be a man of marked ability and position in the community in which he resides, and his opinion will be respected by all.

OFFICIAL NEWS

N. A. M. P. & S. F. of CANADA

OFFICERS 1909-10

President,—Joseph Laurier, Montreal. Vice-Pres.,—G. H. Cooper, Toronto. Treasurer,—H. Mahoney, Guelph. Secretary,—H. W. Munday, Montreal

Provincial Vice-Presidents, Nova Scotia, Frank Powers, Lunenburg; New Brunswick, Wm. Watson, Moncton; Quebec, J. E. Walsh, Montreal; Ontario, R. J. Shannon, Toronto; Manitoba, R. L. Beattie, Winnipeg; Alberta and Saskatchewan, E. J. Young, Calgary; British Columbia, John Colbert, Victoria.

Chairmen of Committees,—Legislation, H. A. Knox, Ottawa; Sanitary, P. C. Ogilvie, Montreal; Apprenticeship, J. Griffin, Montreal; Essay, E. Russell, London.

Next Convention will be held at Toronto, August 31 and Sept. 1, 1910.

NATIONAL EXECUTIVE COMMITTEE MEETING.

A meeting of the sub-executive of the National Association of Master Plumbers was held in Montreal on Wednesday, June 15, the president, J. Laurier, in the chair. Letters were read from R. J. Shannon, vice-president for Ontario and from Weston Wrigley, managing editor of The Plumber & Steamfitter, relative to the arrangements made and proposed in regard to the forthcoming convention in Toronto, on Aug. 31 and Feb. 1. These dates were approved of, and it was decided on the motion of J. E. Walsh, seconded by James Griffin, that Secretary Munday write to both these gentlemen stating that the Sub-Executive fully approve of the work already done, and that Mr. Shannon be authorized to co-operate with his local association with full power to act according to their best judgment.

It was also decided that the matter of securing legislation incorporating the Canadian Society of Heating and Sanitary Engineers as proposed at the last convention be forwarded. Secretary Munday was instructed to write to H. A. Knox, Ottawa, chairman of legislation, on the matter, and the following letter was sent.

At our last convention a motion was made by F. Powers, Lunenburg, seconded by J. E. Farrel, North Bay, that the incoming president, secretary, and one other member be empowered to secure legislation incorporating the association as a Dominion organization with provincial branches, the association's name to be the Canadian Society of Heating & Sanitary Engineers. As you are chairman of the legislative committee I am instructed to write you requesting you to obtain the necessary information and cost of obtaining the charter or becoming an incorporative body.

A letter was received from Mr. and Mrs. J. B. Morris. Montreal, acknowledging a letter of condolence sent by the Local and National Associations of Master Plumbers on the occasion of the death of their son, Thomas J. Morris, and expressing their great appreciation of the act.

MONTREAL PLUMBERS JOIN BUILDERS' EXCHANGE.

An important development is to take place in connection with the Montreal Master Plumbers' Association. For some time they have been renting offices from the Montreal Builders' Exchange, who have the top flat of the Eastern Townships Bank building, and run a permanent exhibition there. Although the association have the use of these rooms, they have no other privileges, but a proposal has now been made by the Builders' Exchange, that the association, by paying a lump sum, should join the exchange as associated members. Thus while the Master Plumbers would not lose their identity, as an association, or have any interference with their meetings, they would be entitled to all the rights and conveniences of the exchange—such as a claim upon the services of the secretary, ratings upon various concerns, access to the whole of the Exchange, and so on.

The Builders' Exchange offer is couched in very moderate terms, and as any such arrangement would dispense with the present payment of rent on the part of the association, the committee, under the chairmanship of P. C. Ogilvie, who has been considering the matter, recommended that the offer be accepted, and there is no doubt that the body as a whole will confirm this.

Apart from the many advantages of becoming associate members of the exchange, the step will be the means of strenghtening the association, as it will be compulsory on any master plumber who wishes to join the exchange, to do so only through the association.

This is a very important step, and promises well for the association. The Builders' Exchange is unique in its way, and apart from the advantages offered, master plumbers will be enabled to get close to many of the men that they do business with. It gives them a freedom that they had not before, while at the same time the association is not affected in any way, and the meetings will be just as private.

So far as the exchange is concerned the development will mean a considerable augmenting of their membership, and as it is proposed to bring in other associations, such as the electricians, carpenters, etc., the exchange should become one of the strongest organizations in Montreal.

LETTER TO ONTARIO PLUMBERS.

The following letter has been mailed to several hundred master plumbers in Ontario by R. J. Shannon, vice-president for Ontario in the National M.P.A. If any readers of The Plumber and Steamfitter have been overlooked they are requested to drop a post card to Mr. Shannon at once :

Dear Sir,—I want your attention for "just a minute." You are a plumber. Are you ashamed of it? Certainly many of us ought to be ashamed to work for the prices we receive for our work.

As a step towards uplifting the trade it is proposed to change the name of the National Master Plumbers' Association to the Canadian Society of Sanitary and Heating Engineers. How would you like to hang a membership certificate of the society on the wall of your shop ?

If you do not think you are receiving the respect due you as a master plumber here is an opportunity for you to help better the conditions of our trade.

Have I still your attention ?

Organization means strength—and it also means education, as by getting together we can win the approval of the public by establishing a uniform plumbing by-law covering the whole province—a thing very much needed, as some large cities in Ontario have no by-laws at all.

Now to the point. The National M. P. Association is to hold its annual convention at Toronto on Aug. 31 and Sept. 1, during the first week of the Toronto Exhibition, when cheap railway rates will be available. I extend a welcome to you to attend.

Two important questions to be discussed will be the proposed change of name and the suggestion that a uniform plumbing by-law be drafted in each province. We want your opinion on these matters. Will you come and give it ?

A big program is being planned and this meeting will be the best held in Canada for many years or I miss my guess.

In order to make the plans intelligently I want to know if you are coming. Are you interested enough to spend a cent for a postcard to acknowledge this letter and let me know whether or not you expect to come? Have you the cent ? Will you spend it ?

R. J. SHANNON.

1233 Queen Street West, Toronto.

Arguments For and Against Elimination of Vent Pipes

H. F. Baillet Summarizes the Result of a Series of Letters Published in the Metal Worker—Result of Experiments on Two Jobs Described and Statement of Conclusions Drawn.

The wide divergence of opinion of practical men, who are honest in their convictions, no matter how they arrive thereat, shows most forcibly the absolute necesssity of some central institution to digest, tabulate and examine by practical experiment these opinions, so that we may be able to positively determine, so far as is possible, some fundamental rules to begin with, from which and upon which may be built up reliable data for the guidance of the sanitarian, the architect and the plumber. A synopsis of the different opinions as expressed by the contributors will prove very interesting :

Summary of Opinions.

Number of contributors, 28 ; opinions based upon specific data, some of which is given, 6 ; opinions where contributors admit never having made actual experiments, 2 ; opinions where no information is given as to method of arriving thereat, whether by practical experiment or theoretical deduction, 20 ; the question of trap seal evaporation is considered neglible by 20 ; the question of trap seal evaporation is considered important by 1 ; the probability of siphonage or sink trap through flushing closet is affirmed by 9 ; the probability of siphonage of sink trap through flushing closet is denied by 4 ; the probability of self-siphonage of sink trap is affirmed by 11 ; the probability of self-siphonage of sink trap is denied by 2 ; the possibility of any siphonic action whatever is denied in toto by 2 ; crown venting is considered poor practice by 5 ; continuous waste and vent piping with P-trap is favored by 9 ; in favor of drum traps 2 ; In favor of non-siphon or repealing traps 1 ; favorably inclined to non-siphoning or resealing traps 4 ; opposed to non-siphoning traps 6 ; expressing opinion in favor of present venting system 5 ; expressing opinion as against any venting system 1 ; expressing opinion in favor of modification in present venting system-simplified venting 14 ; expressing opinion that closet in this case should be vented 2 ; expressing opinion against closet reventing, 4 ; attention called to frictional resistance due to angles, bends, partial chokage, etc., 4 ; attention called to the fact that vent piping arrests decay in waste lines by 3 ; opinion expressed that the sole purpose of vent piping is to avoid siphoning of traps by 1.

Comments on Letters.

In majority of cases, contributors confined themselves to an opinion on one, two or three phases of the case and did not express themselves on the others. Two of the contributors were devoid of any opinion and the greater number were vacillating on some of the points.

One contributor states that in his experience of 20 years as a journeyman plumber he found every case of vent pipe stoppage through grease, due to faulty construction.

One contributor states that he knows of a job arranged like that in the sketch, where the discharge from the closet has siphoned the sink trap.

Two contributors give specific data of experiments that were, however, not made under actual working conditions. For instance, the insertion of a 1¼-in. P-trap into the side of a flush pipe cannot be considered as data to establish the fact of siphonage of a 1½-in. trap under a sink connecting with a 2-in. waste into a 4-in. soil line, the conditions being entirely different. These experiments have their value as determining academic data from which one may reason. But the result of such reasoning must first be tried out under actual working conditions before we can accept it as actual governing data.

The above synopsis and summary speaks for itself. It were super rogation for anyone of us to presume to decide on the meagre evidence at hand as to which is positively right or wrong. Not anyone of us really know enough. The very best we can do under present conditions of knowledge is to add our quota to the evidence. For this purpose I will submit two jobs with which some experiments have been made and detail the experiments. These two are selected because they present somewhat similar conditions to the orginal sketch, which may or may not have been imaginary. At any rate, these are two not imaginary or theoretical ; they are facts !

Example No. 1.

In the first example, Fig. 1, the horizontal vent line turns a corner before entering the 4-in. stock with a 90-deg. elbow. The vertical vent between the closet and the bath tub is offset back into the wall with one 90-deg. elbow and one long bend in lead pipe. The vertical vent to the basin is offset back into the wall above the trap with one 90-deg. elbow and one long bend in lead pipe. The 4-in. soil pipe runs under the floor 7 ft. before it drops down.

This job was put in eight years ago. Being desirous of knowledge as to the question of siphonage, we first measured the water in the basin trap 6 fluid oz. at full seal. We next drove a nail into the top of the U formed by the dip of the trap and there again measured the water after it had run down to the nail hole. The trap at bare seal contained 3¼ oz.

A number of measurements taken since with stock 1½-in. traps determine the fact that 6 to 6½ fluid oz. is the full seal, although we have found some light traps where the full seal only contained 5 to 5½ fluid oz.

We next flushed the closet repeatedly, also filled the bath tub and basin, flushing, them in concert and individually, measuring the water in the traps at intervals. At no time was there any diminution of the water seal. There was no siphonage !

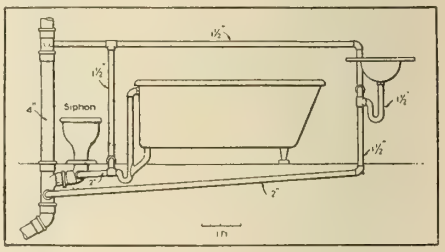


FIG. 1.—SYSTEM USED IN EXPERIMENTS

We then inserted a 4-in. test plug into the pipe at the roof and repeated our tests. At this time siphonage from the closet flush was evident at the basin and bath traps, lowering the water seal in basin trap 4½ fluid oz., so there was a seal of 1 oz. over the bare seal. The bath trap was partly drawn, but at no time even when flushing the closet and basin could we pull more than 2 oz. of water from this trap, leaving 1 oz. of water over a bare seal.

We next tried both basin and bath traps for self-siphonage, but at no time was there a complete unsealing of the traps. The mean pull was a diminution of 1½ fluid oz. in the basin trap and 1 oz. in the bath trap.

We next took out the test plug from the roof pipe, and, cutting into the basin vent above the trap, plugged this with oakum and putty, thus leaving this trap unvented. Under these conditions, flushing the closet set up a siphonic action sufficient to lower the seal in the basin trap to 5 fluid oz. at the first flush and 4½ fluid oz. at the second

flush, leaving 1¼ oz. over a bare seal and no amount of flushing of the closet would lower the seal below this point.

Tests for self-siphonage resulted similarly to those conducted when the roof pipe was plugged, with a slightly greater diminution of water about ¼ oz.

At no time was it possible to break the seal completely in any of the traps under everyday working conditions on these drawn traps of the one-half S-pattern. The only way we can break the seal at the basin trap completely is by having two water pails filled and dumping these into the closet simultaneously while flushing the closet with the tank full to the overflow and with the roof pipe plugged. This is a condition that is hardly possible and certainly most improbable in everyday use.

After eight years of use I have recently repeated the experiments with the basin trap, omitting the cutting and plugging of the vent. The bath trap I could not get at to empty and measure the contents. The results are practically the same as at the first set of experiments.

A peculiar phenomenon is that with the roof pipe plugged the closet will siphon much more slowly and less forcefully than with the roof pipe open. The closet is a low-down, with jet centre outlet, which develops a very strong pull.

During periods of high winds the water in the closet will oscillate considerably, but there is only a slight diminution of seal from this cause, about 1-16 in. in five hours, during which length of time the closet had not been used. The house has several times been closed for a few days, but never long enough for any evaporation to be perceptible.

Example No. 2.

The second sketch shows a somewhat different construction. This has been in about seven years and no tests were made prior to this past winter.

We might call attention to the fact that in neither of these cases is any dish water or other grease conveying liquid used at any of the fixtures.

Deeming that in this particular case the weakest point, so far as siphonage resistance was concerned, was the sink, inasmuch as it enters the horizontal 4-in. closet connection just before the lead bend and because there is a one-quarter bend at the foot of the 2-in. upright line, we tapped the side of the 2-in. T Y and inserted at that point an ordinary vacuum gauge.

Our first tests were in flushing closets, sinks and basins in unison, in groups and singly under every day conditions. At no time does there appear to be any siphonic action nor any loss of water from traps.

Extreme tests have been to fill the sink and basin with water; to have at each closet a man with a full water pail, then at a given signal dump the pails of water, pull the chain at the closets and pull the plugs at the sink and basin. This we have done repeatedly, but at no time did the indicator on the vacuum gauge show any thought

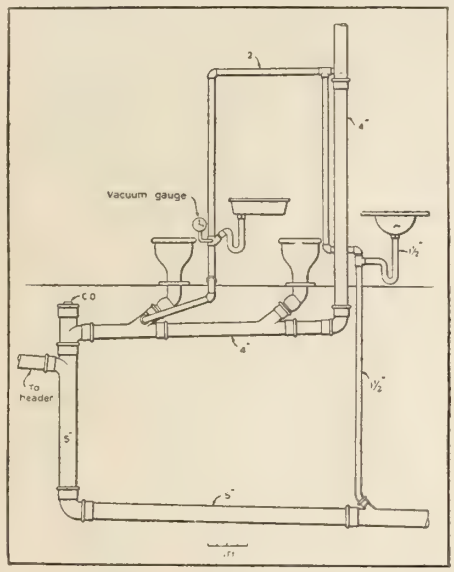


FIG. 2.—THE SECOND JOB TESTED

of an intention of even fluttering, and at no time was there any siphonic action in the sink or basin trap, so long as the roof pipe was open. When both the roof opening and leader opening are closed by test plugs, then the flushing of both closets will invariably cause the sink trap to siphon, losing 1½ oz. at the first pull and unsealing the trap at the second pull.

When the closets are flushed singly the siphonic action is much weaker than with a single closet; we are unable to break the seal, excepting in case of closet No. 1. When this is loaded with a plentiful supply of toilet paper the second pull will break the seal. The only time there is any effect on the vacuum gauge is when both closets are pulled, with a pail of water dumped in at the same time. Under these conditions there is a slight oscillation of the needle for a second or so at the moment of pull in the trap. There is positively no total self-siphonage to this sink. When the sink alone is filled and emptied a slight loss of 1 oz. of water is the limit, self-siphonage at the basin is greater, 1½ oz. loss being there recorded. All this when the roof opening is plugged.

It may be of interest to note that closet No. 1 is operated with a flushometer, with compression tank in cellar, while closet No. 2 is operated with the usual high tank. Both are full-size siphon jet closets. These are the bare facts as they exist. It is left to the interested reader to draw his own conclusions.

Our conclusions, simply stated, are: That the reventing of closets where they are within a reasonable distance from the main stack is absolutely unnecessary, either to protect themselves or adjoining fixtures from siphonage. What a reasonable distance is has yet to be determined. Up to the present time we have found none that caused trouble of this character within 10 ft. of an upright stack or a 2-in. intersection that returned to the main stack. That sink, basin, bath and other fixture traps should have their seal protected by venting, and that the continous waste and vent line with fixtures no further than 4 ft. from an upright line or an intersection returning to an upright line is ample for this purpose. No waste or vent line ever to be smaller than full 1½ in. internal diameter.

Design of Soil and Vent Pipes

Address by F. W. Tower, Springfield, Mass., Before the American Society of Inspectors of Plumbing and Sanitary Engineers.

Occupants of a dwelling may continue to enjoy good health in the face of dangerous defects in a plumbing system as long as ample provision is made for its ventilation.

All sewers and drains should have open communication with the atmosphere at some point to enable air to pass freely to accommodate changes in volume of the liquid flowing through them, or to form a relief pipe for the escape of drain air.

The natural ventilation of sewers and all underground drains is a current of air traveling toward their lower or outlet end during hot weather and toward the ventilating shaft, or upper end, during cold weather, unless otherwise temporarily affected by winds or discharges of waste matter.

The scouring force of a drain or soil pipe is greater when the pipe diameter is as small as consistent with the needs of the building, because the chance for obstruction is lessened, due to the greater velocity and scouring effect.

The proper diameter for a soil pipe is a matter which requires careful consideration.

The pipe should be large enough to

convey without difficulty and within a reasonable time the largest quantity of water that will be required, yet not so large but that the ordinary flow will carry along the refuse that ordinarily accompanies the water.

The ventilation system is that part of the general system whose duty it is to convey to the outer atmosphere any gases of purtrefaction that may be generated or contained within the drainage system; also to prevent, as far as possible, the existence of either a plenum or vacuum within the drainage system, to maintain the seals of all fixture traps, thus preventing the entrance of drain air into a building through the trap seals.

All drain and soil pipes should be so arranged that gases or vapors cannot accumulate or concentrate within the system.

This is avoided by extending all vertical lines through and above the roof

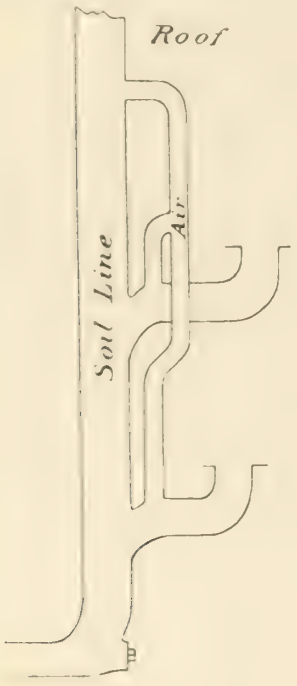


Fig. 1.

with open ends well away from windows, light shafts, etc.

These pipes act as ventilators and any offensive odors are diffused through the atmosphere above the breathing zone and become harmless.

All vent pipes must have an inlet and outlet, otherwise there would be no movement or circulation of the drain air.

The "standard" system of soil and vent pipes is extended up to and through the roof and each fixture trap is vented at or near its crown.

This system also includes the main drain trap with fresh air inlet at or near the front wall.

This system intends that each inch of waste pipe shall have a complete circulation of air and is generally installed as the most sanitary method throughout the United States.

This method frequently requires many horizontal lines of pipe to suitably vent each trap, and many timbers are required to be cut often to the detriment of the building construction.

As air moves more readily in vertical lines, due to natural laws, it frequently proves inadequate in furnishing the required amount of air to prevent siphonage of a trap when a fixture is discharging.

Fixture trap seals with the usual depth of seal are usually siphoned when the friction caused by slight obstructions, such as scale or rust, prevent air reaching the crown of the trap when most needed.

A modified system provides a vertical pipe line adjacent to the main soil pipe line, of suitable diameter, with branches connected from the soil line across to the vent line at each floor close to and above the branch for the fixture connecting to the soil pipe.

In this system the fixtures are grouped near the main soil pipe line, to shorten the waste, to secure better and quicker discharge of the fixture and lessen the expense.

Fixture traps exceeding 12 feet from the vertical stack are vented on the continuous waste pipe plan.

In cottages or in buildings not exceeding four stories in height, a two or three-inch vent line is allowed, but in buildings higher than four stories the main line is of the same diameter as the soil pipe line, and connected at the base of the soil pipe, thus allowing rust and scale to fall into the drain, thus becoming self-cleansing.

As a vent line is intended to prevent siphonage, back pressure and dilute the air in the drainage system, these results are accomplished in this system of venting.

In short horizontal wastes gases cannot collect in sufficient quantities to break through a 3-inch trap seal, which is required in this system, as the current of air is more readily conveyed through the vertical line, as it is in the line of least resistance.

Non-siphon traps are used with this system and prove effective. A modified system was installed in Springfield, Mass., in 1898, and criticised as not being sanitary.

A six-storey building, with several fixtures closely adjoining the main soil pipe, was erected, and horizontal branches were not allowed, due to the necessity for cutting uprights, which would weaken the building if installed.

After instalation of this plan, a severe test was made by causing each fixture on each floor to be simultaneously discharged.

No noticeable lowering of the trap seals was observed, but a slight waving motion of the upper trap seals was noted.

There were 36 siphon tanks discharged, each holding the usual supply as ordinarily furnished by the manufacturer.

When this test was applied the system was believed to be unsafely ventilated, but the result was both surprising and resulted in convincing many that the "standard" system was not the only method of safely instaling a vent system.

As a result of this test it became apparent that other buildings could be safely piped on the modified plan, and because of the lower expense many apartment buildings, also cottages, are

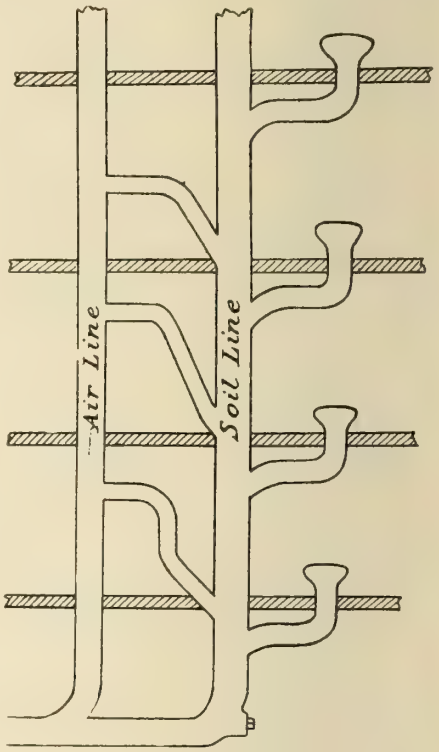


Fig. 2.

now installing this system with economy and sanitary safety.

No main drain trap is installed, as it is an obstruction to the flow of air and waste, a cause of compressing the air when fixtures are discharging which frequently causes trap seals on lower floors to siphon or become forced by back pressure.

With the pipe line opened at both ends, no gases accumulate, as no opportunity offers, or any concentration, to produce back pressure.

If tidal or high water enters the drain or fills the sewer, the air is not compressed, as nothing prevents the free flow to the roof.

All air movement is natural and equilibrium maintained at all times on each side of the trap seals.

With the installing of the modified plan another system has naturally developed, when conditions will permit, and is particularly adapted where a number of fixtures are to be connected on a long horizontal branch, on one or many floors, such as office toilets, dormitories, railroad stations, schools, etc.

Two main lines, of same diameter, one used as an air line, the other as the soil or waste pipe line, are connected beyond the last fixture on the horizontal line from the outlet end, above the overflow point of the fixtures, thus making a continuous vent or circulation system.

This avoids the separate venting of each fixture, with small air pipes, and with 19 water closets, on one such line, all discharging at once, no siphonage took place.

With large air lines it is surprising how much air will reach the drain and prevent either a vacuum or plenum with this system.

With this system both the waste and air lines are extended separately through the roof, but the lower end of the air line is connected at the base in such a manner as to be self-cleansing.

The conditions to be met and the use of the building govern the method to be installed.

In all cases ample air circulation is provided and as yet no back pressure or siphonage has been reported.

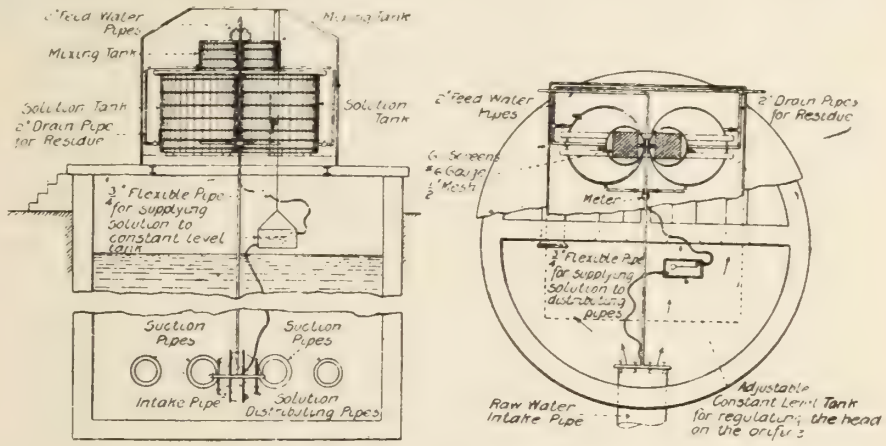
In reporting these systems it is not claimed that a new system of venting plumbing systems is advanced, but under the conditions in which these methods have been installed, nothing detrimental to health is apparent from such instalations, and some consideration should be given to hard facts.

WATER STERILIZING PLANT.

A temporary sterilization plant, which treats 16,000,000 Imperial gallons of water daily with a solution of hypochlorite of lime, is in use at Montreal, pending the completion of that city's filtration system, on which work is now in progress. The chemical is applied to the raw water near the bottom of an intake well into which the ends of the suction lines from pumps extend. The equipment, which is placed over the intake well, consists of 2 wooden mixing tanks mounted above two large solution tanks, from which the chemical flows through a flexible rubber pipe to a constant level feed tank and thence through a second length of flexible pipe to a manifold of pipe, through small holes in which the hypochlorite is discharged.

The charge of bleaching powder is first rubbed through the screens on top of the mixing tanks, and mixed with water into a thick paste; then the whole charge is dissolved by water from the supply pipes shown in the accompanying drawing, and the lower tanks allowed to fill with the solution of the required strength. Each solution tank has sufficient capacity for 24 hours' supply. The solution is made up in one tank, while the other is emptying into the water supply, and by the arrangement of piping shown, the tanks can be interchanged on the feed without interruption, thereby securing a continuous flow into the constant-level tank.

From the solution tanks the hypochlorite flows through a 2-inch central valve and meter to a small, constant-level tank, suspended in the intake well. The function of this tank, which may be raised or lowered by means of the small crank shown in the drawing, is to regulate the head on the distributing grid, so that a proper quantity of the solution may be added in proportion to the pumpage. The solution tanks and distributing grid are connected by rubber hose. The solution in flowing into the raw water in the manner shown through small holes in the piping of the grid, is more or less uniformly distributed throughout the water entering by the intake pipe.


Feed Water Pipes
Mixing Tank
Solution Tank
2" Drain Pipe for Residue
¾" Flexible Pipe for supplying solution to constant level tank
Suction Pipes
Suction Pipes
Intake Pipe
Solution Distributing Pipes
2" Feed Water Pipes
2" Drain Pipe for Residue
Screens #6 Gauge ½" Mesh
Meter
¾" Flexible Pipe for supplying solution to distributing pipes
Raw Water Intake Pipe
Adjustable Constant Level Tank for regulating the head on the orifice

Water Sterilizing Apparatus at Montreal.

The quantity of water pumped at present is about 16,000,000 Imp. gal. in 24 hours, and about 120 pounds of bleaching powder per day is used. The strength of the solution in the large tanks is about 0.5 per cent. and 100 gallons per hour is fed to the supply; that is, the raw water is dosed with bleaching powder in the proportion of about 1 part in 1.3 millions of weight. The commercial product has an average of 37 per cent. available chlorine.

LEAD FIBRE.

A somewhat new product for the calking of gas and water pipe joints is the lead fibre made by The Canada Metal Co., Toronto. As its name implies it resembles fibre or shredded lead, and is used instead of calking lead. Some of the advantages in favor of the use of lead fibre are that no melting is required, saving thus the expense of a fire basket; there is no loss through dross or waste by spilling, and a saving of about 33 1-2 per cent. of material is effected. The price of the fibre (because of manufacture) is, of course, higher than pig lead, but as only half the weight is used as compared with a cast lead joint there is a saving of about 25 per cent. in cost. When calking a joint the sockets are filled with plain hemp yarn, well calked in, then the fibre is twisted into a strand the size of the opening, this is wrapped around the pipe once and calked well home. Each twist of fibre is calked the same way until the socket is filled just below the top. The result is a solid, cold-welded lead joint calked all the way through, giving great strength and resistance. A good heavy hammer and a calking tool are the only tools required to assure a good job.

General Buildings.

The Cardston Implement Co. will erect a warehouse at Cardston, Alta.

Geo. P. Smith and F. Pike will build a business block at Camrose, Alta.

John Mosley has purchased a site for a new Dominion Hotel, at Calgary.

C. Lloyd & Son will erect a new building at Wingham, Ont., to cost, $15,000.

The Western Club, Vancouver, have a permit for a club house, to cost $53,500.

A new hotel, to cost $150,000, will be erected at Saskatoon by Charles Underhill.

The Terminal Construction Co. will erect a building at Vancouver, to cost $10,000.

A permit has been issued at Brandon for a business block, to cost, $20,000. for F. Nation.

A permit has been issued for the James Hope Building, to be erected at Ottawa, at a cost of $90,000.

Chas. Hall has commenced the erection of a new warehouse and office building for Beattie & Sons, at Brandon.

The Cost of Conducting a Plumbing Business

V. R. Donovan, Brockton, Mass., Makes Some Interesting Points in an Address Read Before the Massachusetts State Association of Master Plumbers.

The first paragraph in the pamphlet gotten out by this association, under the heading "Objects of the National Association of Master Plumbers," contains the following:

"In this day, it seems hardly necessary to attempt to convince anyone of the need or advantage of such an organization as ours."

Very true; but we fall far short of our full duty unless we carry to its ultimate the various suggestions advanced by the special committees appointed from time to time. Our conventions are great educational factors in the business life of each member present. They help to broaden the views on all subjects discussed, and very often go so far as to have a monetary value for those of us who follow along the lines as laid down in the different papers.

Loyalty to the association is the first duty of every member, and in what better manner can we show that loyalty than by pointing out the road that leads away from failure and bankruptcy? This I will attempt to do in this paper. To give the proper method of arriving at cost of doing business, and what should be properly included in that cost, is to my mind of the highest consideration.

System in the Office.

First and foremost, you must have an office system. You must know what comes into your shop, and what goes out. To do that a record must be kept, either in duplicate or triplicate. No order for goods from your supply house should be written on a sheet of your regular stationery, but it should be made out on the regular forms, which can be purchased at any stationery store. The book carried by the traveling salesman will answer every purpose. This order being made in duplicate, the original will be sent to the supply house, and the copy filed away until the goods arrive, when they will be checked up from this copy to see that they correspond in every particular. If not, then a note of the changes should be made in a book kept far that purpose alone. Should the copy of the order and the goods, as received, tally, then the copy is transferred to a book or loose-leaf ledger, called the stock-book. That part is now finished.

When any material is wanted, whether it be for jobbing or a contract, a requisition blank, also made out in duplicate, is obtained at the office and taken to the stock-man or boy, as the size of the business warrants, and by him filled. He returns the requisition blank with his check on it, when it is transferred to the opposite side of the stockbook, in which the supply house order was entered. This stock-book, or loose-leaf ledger, having separate pages for each different article carried, shows you at a glance how much of any particular article you have on hand. Then again, a book or loose-leaf ledger or a card index should be kept for all quotations given you, and of prices paid for any article, so that there will never be any doubt as to where to purchase a certain article at the lowest possible cost.

Another book that is absolutely necessary is a contract-book, as distinguished from an estimate-book. An estimate-book in printed form can be purchased for 50 cents from "Domestic Engineering." The contract-book is a record of all material taken out, and the labor and expense incurred in the performance of each job, due credit, of course, being given to material returned. At the completion of each job a slip is made out, comprising the different totals, when it is now ready to be put through the ledger, closing in full that particular job in so far as the contract-book is concerned.

Help Will Not Cost Much.

You may say, "All this takes too much time, and costs a lot of money;" but I venture to say that a six-dollar-a-week girl clerk, and a nine-dollar-a-week boy, can keep everything up to date for six men and three helpers, provided you understand book-keeping yourself, and will teach her the different details, except the trial balance, each month. Of course, if you don't understand book-keeping, you will probably be obliged to pay a young lady $12 or more per week; but even at that price it pays, and pays handsomely.

Now we come along to the most important thing in the business; namely, what comprises the bid you are going to submit on any job. You know by filling out your estimate sheet what material it will take, and the cost of same. You also know very nearly the time it will consume, together with certain other items, such as car-fares and freight. Provided you know what per cent. it costs to do business (and that item, how to figure cost of doing business, will be touched upon further along in this paper), it would be manifestly unjust to yourself to simply say, "I will add 10 per cent. to my cost of doing business, and add it to the total labor, merchandise, and small incidental expenses," because your cost of doing business is derived in part from your jobbing, and in a great many shops jobbing is the largest item of the business, together with the shop-sales.

Should you figure contracts that way, you will find you will receive more of a certain kind of jobs because of the low bid given, whereas certain other kinds of jobs you will never be able to get for the very opposite reason, that of being too high. Two simple examples will illustrate my point; but before touching on that, let me say that expert accountants in our line, who have handled the affairs of hundreds of bankrupt plumbing firms in this country, tell us that in the average business of, say, $25,000 per year, it cost 40 per cent. of the labor to keep the labor going; and I firmly believe they are right.

Take two lavatories of the same size, but of different quality, one costs $5, and the other costs $25. It takes practically the same labor to install, and the express or freight charges are the same, so we have the items reading thus: $5 for the lavatory, $2.50 for labor, 75c for express; total, $8.25. On the other hand we have $25 for the lavatory, $3 for labor (and we allow $3 instead of $2.50 because we feel that the article is more valuable, and would entail a greater loss, if broken, than the less expensive lavatory), 75c for freight (same as before), making a total of $28.75.

Wrong Way of Figuring.

Now, a great many firms figure to add 20 per cent. to these totals, and that constitutes their bid. I claim this is totally wrong, as we shall see: 20 per cent. of $8.25 is $1.65, added to $8.25 makes $9.90; 20 per cent. of $28.75 is $5.75, added to 28.75 makes a total of $34.50. Now, then, we will take the other way: That is, by adding 50 per cent. for the labor, and then adding 10 per cent. to the total for our profit, and we have the two examples reading thus: $5 for the lavatory, $2.50 for labor, 40 per cent. of the labor is $1, 75c for the express, making a total of $9.25; and the 10 per cent. for our profit to be added, which is 92c, making a total of $10.17. On the other hand, $25 for the lavatory, $3 for labor, 75c for express, and 40 per cent. of the labor, or 1.20 for general ex-

pense, making a total of $29.25 ; 10 per cent. for our profit, $3, makes a total of $32.95.

You may not be able to catch all this, but the totals in one case were $9.90 and $10.17 ; in the other case the totals were $34.50 and $32.95, showing that a person could obtain one job because he was too low, whereas in the other case he would have lost the job, because he was too high.

This can be tested on larger jobs ; as, for instance, a $10 and a $100 lavatory, also a $100 and a $500 bathroom. In each case you will find that by figuring 40 per cent. of the labor, as expounded by the expert accountants, will bring you out correctly in each case, whereas in the other cases, that of adding 20 per cent. of the totals, you are either too high or too low. If too high, you will lose the job ; if too low, you are on the sure road to bankruptcy if you continue alone that line.

Examples From Real Practice.

Here are three actual contracts, as taken from my journal, which we will designate as examples A, B and C.

Example A : Contract price $85, labor $17.40, merchandise $50.45, expense $1.60, general expense, which is 40 per cent. of the labor, $6.96, making a total of $76.41, the entire cost to carry out that job, subtracted from the contract price of $85, leaves a net gain of $8.59, which is 10 per cent. for profit.

Example B : Contract price $163, labor $20.70, merchandise $115.20, expense $2.10, general expense, or 40 per cent. of the labor, $8.28, making a total of $146.28, subtracted from the contract price, $163, leaves a balance for gain of $16.72, which, as you see, is 10 per cent. for profit.

Example C : Contract price $531, labor $85, merchandise $350.16, expense $7.90, general expense, or 40 per cent. of the labor, $34, making a total of $477.06, subtracted from the contract price, $531, leaves a balance for gain of $53.94, which is 10 per cent. for profit.

And now we come to the method of figuring the right percentage, and I cannot explain it more clearly than it is expressed in an article that came under my notice, published in one of the leading journals of the country. I take the liberty of quoting the article in full :

The most important problem is encountered when the merchant sets about the computation of his profits. This is a rock on which many mercantile ships are wrecked. One careless merchant who was doing business under heavy expense—he estimated it to be 25 per cent.—thought he was breaking even on some of his advertised lines, when he sold them at a profit of 25 per cent. above delivered cost—that is, actual cost plus freight. One day the sheriff took possession of his store, and it took an expert accountant three whole hours to demonstrate to Mr. Merchant that he had actually lost 5 per cent. on these lines, because he didn't know how to figure profits. And the surprising fact has now developed that many merchants have been for many years figuring their profits upon the wrong basis. If one were to figure his cost of doing business on his gross sales, and his percentage of profit on the price paid for merchandise—as many merchants are now doing—he would be dead-wrong.

If an article costs $1 and is sold for 25 per cent. more than it costs, or $1.25, and the cost for doing business is 25 per cent., the dealer has actually lost 5 per cent. on the transaction.

If an article costs $1 and the dealer adds 43 per cent. to its cost and sells it for $1.43, and the cost of doing business is 18 per cent., he has not made the difference between 18 and 43—or 25 per cent.—not by any means. He has made just 12 per cent.—no more, no less.

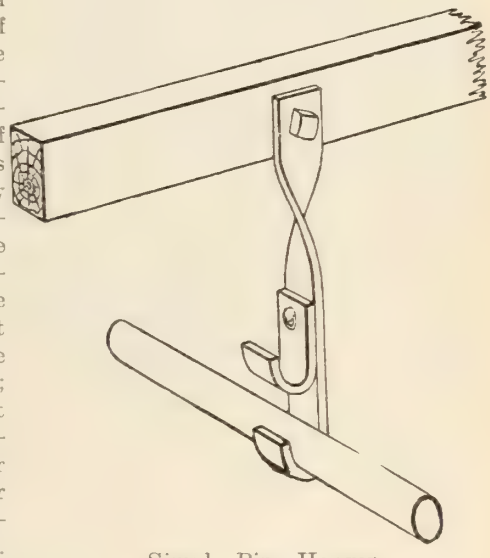
Cost of Doing Business.

Here is the problem : The dealer pays 96 cts. for an article and adds 4 cts. for freight, making a real cost of $1. As he has decided to make 43 per cent. his average gross profit, he will sell the article for $1.43. Now, his cost of doing business is 18 per cent.; therefore he must charge 18 per cent. of his selling price against the cost of the article. He would not take 18 per cent. of $1, for then he would be figuring his expenses from cost—and as already stated his original 18 per cent. is derived from the total sales, which is the sum of the selling prices. All percentages must be figured from the same data. The percentages of gross and net profit and the percentage of expense must be figured from the selling price ; 18 per cent. of $1.43 is 26 cts. It therefore costs 26 cts. to sell this article. The actual cost then to the dealer is $1.26. As the articles are sold for $1.43, there is made the difference between $1.43 and $1.26, which is 17 cts. This represents the actual profit in cents. Right here is where one is apt to go wrong, where many experienced merchants do go wrong. They assume, because they have made 17 cts. on an investment of $1, that they have made 17 per cent. But they are wrong. If the cost of doing business is figured from the selling price—which it must be—the profit, both gross and net, must be derived from the same figure, the selling price, else the cash on hand and books won't tally. The actual investment, so far as profits are concerned, is not what has been paid for the goods, but what the goods can be sold for. Therefore profits must be figured from the selling price. Since 17 cts. will be netted on this sale of $1.43, there will actually be made 12 per cent. net,—no more, no less. 43 per cent. on delivered cost, or 30 per cent. on sales mean exactly the same thing. 43 per cent. of $1 is 43 cts., 30 per cent. of $1.43 is 43 cts. But as the dealer must start to figure from his delivered cost he must add 43 per cent. to this cost to make 12 per cent.—providing his expense is 18 per cent.

Many merchants figure that if they want to make 12 per cent. net and their expenses is 18 per cent., all they have to do is to add 12 per cent. plus 18 per cent. (or 30 per cent.) to the cost and sell the article for $1.30. This is where the mistake arises. The merchant who buys an article for $1 and sells it for $1.30, and whose expenses run 18 per cent., makes only 5 per cent. not 12 per cent. 18 per cent. of $1.30 is 23½ cts. Therefore the total cost is $1.23½, and the actual profit is 6½ cts.

A SIMPLE PIPE HANGER.

The hanger shown in the sketch consists of two or more small hangers, riveted together in such a manner as to form hooks at the required distance from each other, says an exchange. The hangers are made of wrought iron, about ⅛-inch thick and 2 inches wide. The iron can be heated first and bent around a pipe of the same diameter as that which is to be used. This will prevent the pipe from vibrating after it is hung. If the pipes are to run in opposite directions, or to the beams above them, the iron can be heated and twisted to the right angle. The upper end is drilled to receive a ½-inch lag screw, by which the hanger is fastened to the beam.



Simple Pipe Hanger.

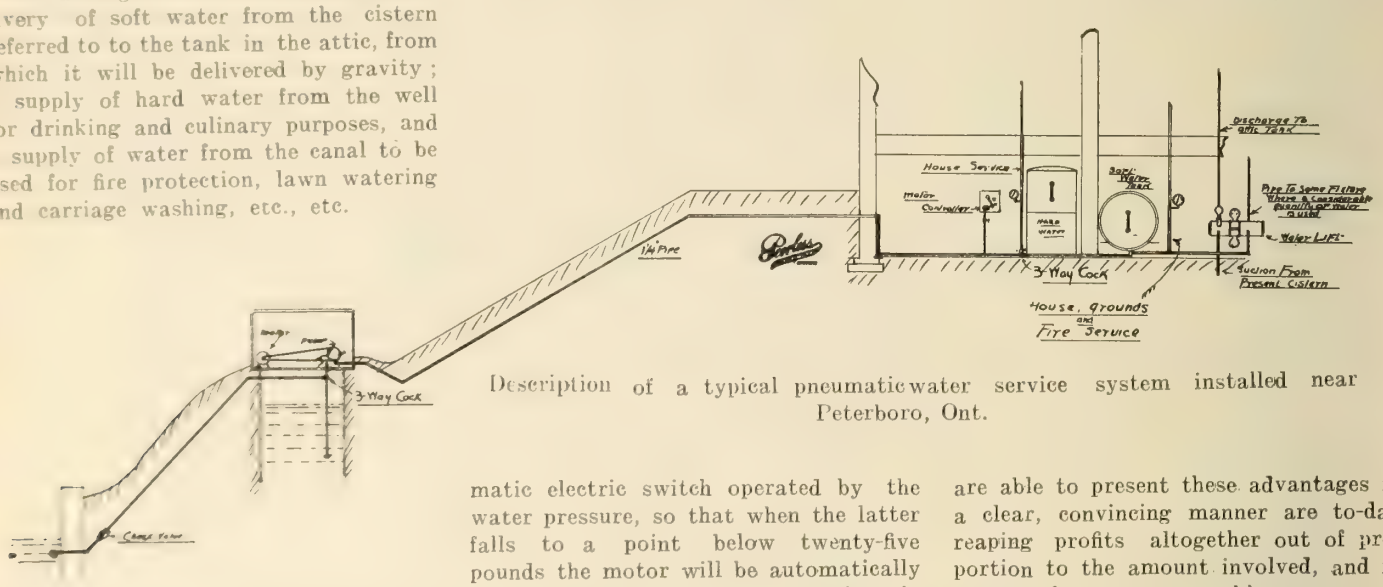
Opportunity for Master Plumbers to Make Money

Description of a Typical Pneumatic Water Service System, Showing the Water Supply and Pumping System — Electric Power Used—Cost of the Outfit—Good Profits Can be Made.

A pneumatic water service system covering a rather wide field of requirements, and one which is in every way complete is illustrated in the accompanying cut. The conditions under which the system will operate are as follows :

The building to be served is situated on a hill about ninety feet above the bank of a canal and about six or seven hundred feet distant therefrom ; a well is located within one hundred feet of the canal, and the low water mark in the latter is slightly above that of the former. A very large cistern holding something over one hundred barrels is located in the basement of the building, and from this the water has for years been pumped to a tank in the attic, and because of its value for laundry purposes and for the additional reason that the water in the canal is none too clean, the owner insisted on provision being made for a continuance of the supply of soft water from this cistern.

The arrangement then includes the delivery of soft water from the cistern referred to to the tank in the attic, from which it will be delivered by gravity ; a supply of hard water from the well for drinking and culinary purposes, and a supply of water from the canal to be used for fire protection, lawn watering and carriage washing, etc., etc.



Description of a typical pneumatic water service system installed near Peterboro, Ont.

Naturally, on account of the elevation of the house above the source of supply it was necessary to put the pump down near the water, and, electric current being available, it was chosen as the motive power.

The suction pipe from the pump drops directly into the well, and is intersected immediately below its base by the suction pipe from the canal, a three-way cock being used at the intersection of the two pipes, so that the water from either source may be turned in at will.

The delivery pipe from the pump is carried straight up the hill, below the frost line, and directly into the building, at a point close to the hard water tank, which is forty-two inches in diameter by six feet high. At this point also a three-way cock is used so that the water may be delivered either into the hard water tank or by-passed to what is called the soft water tank, meaning in this case canal water.

From the latter tank is taken off a main pipe to discharge water to the barns, lawns, etc., and from this pipe a branch is taken to a lawn hydrant, or some other point where a considerable quantity of water will be used, and the water from this branch is passed through a water lift, the suction of which is connected with the cistern in the cellar and the discharge to the attic tank, so that whenever water is drawn through the branch from the canal water tank the water lift will automatically pump water from the cistern to the attic tank.

In the basement is located an automatic electric switch operated by the water pressure, so that when the latter falls to a point below twenty-five pounds the motor will be automatically put into operation and will continue in this condition until the pressure is raised to say sixty pounds, or at such other point as the switch diaphram may be set at, when the switch will be thrown out and the operation of the pump will cease.

As the hard water will be the least used, the three-way cock will be turned toward the canal water tank all the time excepting when the hard water tank is being filled, which should not be more than once a week, and one-half hour's pumping will deliver the required pressure.

One of the special advantages of this system is not only the large amount of water stored in the canal water tank, viz., about fifteen hundred gallons, which will at all times be available for fire protection, but that should it be required for this or any other service the taps are turned on and the motor will automatically start itself, and provide a continuous stream just as would be expected from an up-to-date municipal water service.

Another feature that will commend itself to the average consumer is the exceptionally low cost of such an apparatus, having regard to the quantity of material furnished and the thoroughly adequate service that it will render. The whole cost of the plant above described, not including the pipe or instalation, amounted to only $574 f.o.b. Toronto.

There are undoubtedly hundreds of property owners in Canada who, if they were aware of the perfect service in the line of water supply that can be rendered by pneumatic water service systems, would not hesitate to pay a plumber $1,000 for such an equipment, and those among the trade who are awake to the advantages of this system over the old fashioned one, and who are able to present these advantages in a clear, convincing manner are to-day reaping profits altogether out of proportion to the amount involved, and in scores of cases are making seven or eight times as much out of the water service end of the plumbing contract as they make out of the whole of the balance of the latter.

Pure cement, one plumber has found, mixed neat with water shows a slightly alkaline chemical reaction, and has proved a good preservative for steel and iron when applied to such surfaces with a paint brush. It is necessary that the coating be continuous if this method of rust-proofing is to prove satisfactory.

Wonderful Powers of Water Described

One of the Mightiest Elements in Nature—Some of the Remarkable Features of Water Outlined by George G. Bennett.

Water has been the means of accomplishing more for civilization than coal was ever known to do, and was in existence several ages before a pound of coal was ever discovered. Up to the present time, the entire range of possibilities of a pound of water have never been attained, and probably never will be entirely known; while, on the other hand, the possibilities of a pound of coal or carbon have been determined for many years. Water has never been mastered. Its composition requires the union of only two elements. It may be evaporated and blown away with the breath, and when unconfined, as a gas, knows no bounds or limits. The energy and possibilities of a pound of coal can be easily demonstrated, but who has ever demonstrated satisfactorily the amount of energy stored up in a pound of water under all the possible conditions in which it can exist? Experiments by De la Tour, French chemist, have been made with water up to a temperature of 773 deg. Centigrade (1,432 deg. Fahrenheit) and as the boiler plates became nearly red-hot, the experiment ceased. The same experiment was tried some years ago in England, with similar results; the exact pressure could not be obtained, as it was found necessary to discontinue the experiment, on account of the vessel not being able to withstand an increase in pressure.

Water in Steam Pressure.

If we could reduce a pound of steam at atmospheric pressure to water without the loss of heat, the heat stored within the pound of water would cause it to become red-hot; and if it were possible to change this pound of condensed steam to a solid, like ice, without loss of heat, the solid would be white-hot, or hotter than melted steel—it being assumed, of course, that the specific heat of the water and the ice remain normal, or the same as they respectively are at the freezing point. The same amount of heat that it takes to change one pound of water from 32 deg. to steam at 212 deg. would convert one pound of iron into a liquid, and, as given by George H. Babcock in "Steam," the heat absorbed by a pound of water to convert it into one pound of steam at atmospheric pressure would have been sufficient to melt three pounds of steel or thirteen pounds of gold.

With the exception of hydrogen, water has the greatest specific heat, or heat-absorbing capacity, of all substances, and is the unit of comparison employed for all measurements of capacities for heat. The specific gravity of water is taken as unity.

It furnishes, weight for weight, a much larger amount of vapor than any other known liquid. A cubic inch of water at its ordinary atmospheric boiling point expands to nearly a cubic foot of steam at 212 deg., or about 1,590 cubic inches.

Water will boil at a less temperature than 212 deg., if the pressure is reduced. In an absolute vacuum it will boil at 32 deg., and at a pressure of 100 pounds (gage) it will not boil at a temperature below 337.6 deg.

Converting one pound of water into steam at atmospheric pressure is equivalent to raising about 751,548 pounds to a height of one foot, and, if done in one minute, is equivalent to the energy that 22.77 horsepower is capable of developing.

Power of Water Unmeasured.

To illustrate what water will do, we will call attention to the hydrostatic press, which is used whenever great power is to be transmitted through a small space. Two of these machines were used to raise the immense tubes of the Britannia bridge to their proper elevation. Such was the force employed to drive the water into the cylinders that it was required to raise the jet of water 20,000 feet high in a vacuum, which is equivalent to a pressure of about 9,000 pounds to the square inch. Just imagine for a moment a stream of water issuing from a nozzle under 9,000 pounds pressure, about 1,131 feet a second, or 67,860 feet a minute.

Think of this velocity; think of what water is capable of doing, that liquid that the poets delight to call "limpid," rushing along at a velocity of thirteen miles a minute, tearing up everything in its path; there is nothing that is able to withstand this terrific force. It would be sufficient to bore a hole through a plank at a distance of 1,000 feet; a mountain would fade away before this stream like snow before a summer's sun. Turn this stream on one of our largest buildings and it would vanish from sight in the twinkle of an eye; it would rip up our pavements as if they were sand dunes; it would roll rocks the size of our largest lake steamers before it just as easily as a small boy rolls a marble along the paved street. It is one of the mightiest elements in nature.

In California a single jet of water six inches in diameter is issuing from a nozzle at the rate of 20,000 feet a minute, or a pressure of about 650 pounds a square inch; and in Colorado, a turbine is operated under a head of 2,000 feet, or a pressure of 866 pounds a square inch. The efficiency of the water turbine is about 85 per cent.—no loss here of 83 per cent. as with the "pound of coal."

This sublect might be carried to an indefinite length and still be interesting, but we think the above facts will be sufficient to prove our point, that water is "king," always has been "king," and will ever remain "king" as long as water exists on this mundane sphere.

WIND AND VENTILATION.

H. W. Whitten in an address before the American Society of Heating and Ventilating Engineers, said the inleakage of air through crevices was the most apparent effect while the least apparent, but nevertheless important effect, is the outflow of warmed air through crevices in the sheltered side of the building, which acts as a partial vacuum. As the pressure of the inside warm air is naturally outward, the combination of this pressure with the partial vacuum outside produces a greater loss than is sustained on account of inleakage, assuming the aggregate amount of crevices on each side to be equal. The author then describes a few typical tests made by him and others in this connection, some of which are given here. A room situated on the east side of a rectangular school building, with a northwest wind blowing 14.5 to 15 m.p.h. and an outside temperature of 33 deg., showed an average rate of supply velocity of 817 ft. per minute and a vent velocity of 340 ft. per minute, giving a loss of 477 ft. per minute. The inlet was 8 ft. above the floor and the outlet at the floor, both being of equal size and on side of the room opposite the windows. An air test showed 10 parts of carbon dioxide in 10,000. A test of another school building with wind at 18 m.p.h. and outside temperature of 30 deg., the building being heated and ventilated by the gravity indirect system, showed an average loss of 20 per cent. from the supply ducts and an addition of 60 per cent. to the vent velocity in rooms on the windward side. Rooms on the leeward side of the building showed an addition of 30 per cent. to the supply velocity and a reduction of 62 per cent. of the vent velocity. Another test was performed in a high-school building. After shutting down the fan the supply ducts were closed in the rooms on the exposed side of the building and, with all doors and windows closed, it was found that as much air was being removed from the vent ducts as the fan system was supposed to supply. During this test the outside wind was of moderate velocity.

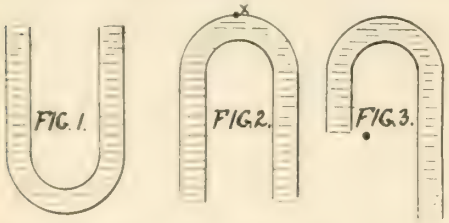
WHAT SIPHONAGE IS.

Editor Plumber and Steamfitter.—In reading the paper I see the term "siphonage" very frequently alluded to and I wish that you would be kind enough to explain the same and it's connection to plumbing.

ONE WHO IS LEARNING.

Hamilton, June 9.

The siphon is an instrument whereby a liquid is conducted from one vessel to another through a pipe which raises above the level of the liquid. That is the book definition. We show in figures 1, 2, and 3, some drawings showing the idea. Bend a pipe in the form of figure 1 and fill it with water. Now turn this pipe upside down as seen in figure 2 and no water will run out. This is because that the sides or legs are equal and the same weight of water is pulling downward on each side. Now make a pipe after the fashion of figure 3 and perform the same experiment and you will at



once see that the water will run out. Punch a hole at "X" in figure 2 and the water will also rush out. These forms of pipe a little extended will form a trap. Now a trap without any vent on it (as might be represented by "X" in figure 2) will stand a good chance of having the water pulled out of it some times under certain conditions and hence the term, siphoning.—D.C.

STOPPING LEAK IN RADIATORS.

Editor Plumber and Steamfitter.—I have a radiator that leaks at the bottom between two of the loops and I have pasted it up many times with various mixtures all to no effect. Can you suggest any way to fix it and make a sure job of it?

Vancouver, June 4. S.E.P.

If we had that radiator to fix we should disconnect it and probably take it out into the yard where we would have room enough to take it apart. If it was of the screw nipple kind you may have some trouble in getting it apart. Put in a new nipple when you succeed. If it is of the push nipple variety pull it apart and clean both the nipple and the radiator. Place the nipple in as it should go and start the radiator together. Before it is drawn up too tight wind some wicking around the nipple tightly but evenly and bring the sections up, a little practice will enable you to do this right the first time trying in each instance.—D.C.

ABOUT THIS DEPARTMENT.

Readers of The Plumber and Steamfitter will have noticed an increasing interest in the "Questions Answered" department which has developed into one of the leading features in each issue of the paper. Not only master plumbers and journeymen, but also apprentices, on the one hand, and manufacturers of plumbing specialties, on the other, have manifested their interest by writing Plumber and Steamfitter regarding matters which have been discussed in this department.

The department has great educational value as most of the queries propounded come from the very roots of the trade, from the men who are doing the practical work in the shop and on the job.

The editorial staff of The Plumber and Steamfitter, in conducting this department, labor under certain difficulties inasmuch as they cannot be on the job and see the problems for themselves. It is advisable, therfore, that when questions are asked the fullest possible detail be given and sketches illustrating the matter be submitted. Instead of suggesting what the trouble may be, state what the conditions really are and what is actually happening. This will enable us to tackle the problem with a better show of giving more definite information.

No department in the paper can be made of more practical value than "Questions Answered" and we solicit the co-operation of all who desire to see a Canadian trade paper published to deal with the trade problems which are peculiar to plumbers and fitters in this northern climate.

Send us a question to answer or send your comments on any question discussed in this department.

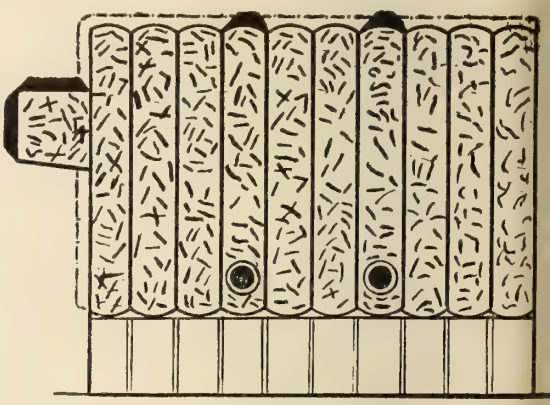
MAKING THE ASBESTOS STICK.

Editor Plumber and Steamfitter.—Last year I had considerable trouble in making the asbestos stick to my heating boilers and wish that if you know of any good manner of putting it on that you can recommend that you would show it in the paper before long.

STEADY READER.

Winnipeg, June 2.

We give a sketch as requested. This represents a side view of an ordinary heating boiler, the short uneven lines on the section show where the asbestos has been cut with the trowel to let out the air after the second coat has been



put on. After this coat has dried white the third or finishing coat may be put on very thin and smoothed down with a trowel. A little Portland cement added to the last coat will make a harder finish. The first coat is merely slung at the boiler and will lodge in dots or small lumps in an irregular manner all over the sides and top. The asbestos should be wet up most thoroughly before it is applied as it is a mistake to try and put it on too dry. The specifications generally state the thickness of coating required.—D.C.

PROPER PLACE FOR VENT.

Editor Plumber and Steamfitter.—When a trap on a lavatory or sink is vented should it be vented at the crown or at some other portion of the trap?

Halifax, June 5. J. B. S.

We should consider that the trap in each case would be better if vented a short distance below the crown as there

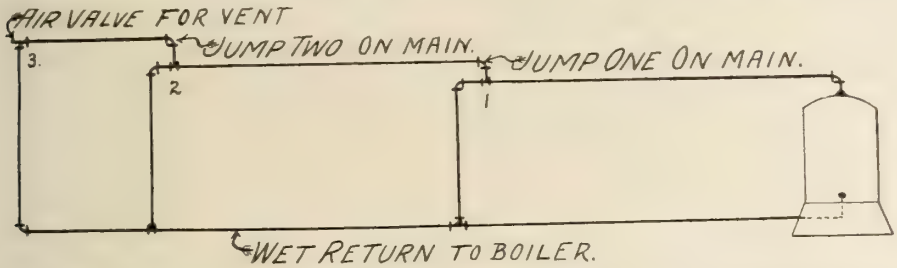
would be less chance for evaporation or stoppage which is liable to occur at this point in many cases.—D.C.

ELEVATION IN CLOSE QUARTERS.

Editor Plumber and Steamfitter.—I have quite an unusually long run of mains to string on a job and the cellar is somewhat shallow. Can you give me any hints in the matter in an early issue of your paper ?

Saskatoon, June 3. ANXIOUS.

If our friend will run a wet return and jump his mains after the way we suggest in the sketch given we believe that he will have no trouble with the



work. Notice that at points 1 and 2 the main is carried beyond the "tee" which rises from the main. There is also a question as to whether or not the main would be air bound at points 1 and 2. We think not, however, as we believe that the air would rise in the main and follow the line of the main to the highest point, shown at figure 3.—D.C.

WHAT IS A DAY'S WORK?

Editor Plumber and Steamfitter.—Can you give me any information as to the number of radiators that a steam fitter should set in a day ? I have argued this question several times and thought that you might be able to throw a little light on the subject.

ST. LAWRENCE.

Montreal, June 11.

This depends on several points such as the amount of head work the fitter is capable of displaying, also whether it is a steam or hot water job and whether it is in a building already completed or not.

There are also other points which we will not take time to mention. Sometimes many difficulties arise to hold the fitter back the best that he can do, but under ordinary circumstances a fitter should put in two hot water or four steam radiators per day of eight hours. We have seen a fitter set six steam radiators in a day. At another time that same fitter has worked all day on one radiator and failed to complete the setting then. Therefore these figures will have to be tempered with common sense and a good knowledge of the job you wish to figure on in case that is what you want.—D.C.

INSTANTANEOUS HEATING.

Editor Plumber and Steamfitter.—Will you tell me in some issue of your paper something about the capacity of some of the instantaneous gas heaters. How many gallons an hour one could reasonably expect to get of hot water from them.

Kingston, June 10. J. I. C.

The amount of water would depend somewhat, of course, upon the size of the heater. This varies, we are informed, from some 90 gallons an hour in a small heater, to about 360 to 375 gallons an hour in the largest sized heaters. You must not understand that the water comes up to the boiling point. It is hot enough for bathing and kitchen use.—D. C.

LOOP HOT WATER SYSTEM.

Editor Plumber and Steamfitter.—I enclose sketch of a loop hot water system installed in a 17 suite of appartments erected in this city which gives entire satisfaction which consist of a small Gurney jacket heater 1-500 gal. $\frac{1}{4}$" steel riveted tank, 1-120 gal. copper-lined feed tank, and $1\frac{1}{2}$ galvanized iron feed and circulation pipe with $\frac{3}{4}$" gal. and vent or air pipe to tank in attic, which is very simple in construction.

It this is satisfactory for publication for your paper, I will try later, to describe a job done in the Honeywell systen of hot water heating. These may be of interest to some of your readers.

Ottawa, June 6. J. C.

We are very glad to receive descriptions of interesting jobs and feel certain our readers will be equally interested. Possibly other subscribers can send a sketch and description for publication and discussion.—Editor.

MANUFACTURERS OF TOOLS.

Editor Plumber and Steamfitter,—Kindly publish a list of some manufacturers of plumbers' tools.

McKINLEY & NORTHWOOD.

Ottawa, June 1.

Macdonald & Sons, pipe tools, Toronto.

Borden-Canadian Co., die stocks, Toronto.

J. H. Williams & Co., wrenches, 77 Richards St., New York.

Armstrong Mfg. Co., stocks and dies, 317 Knowlton St., Bridgeport, Conn.

Otto Bernz, torches, 13th Street, Newark, N.J.

Leow Mfg. Co., pipe machines, Cleveland, Ohio.

North Bros. Mfg. Co., hand and breast drills, Philadelphia, Pa.

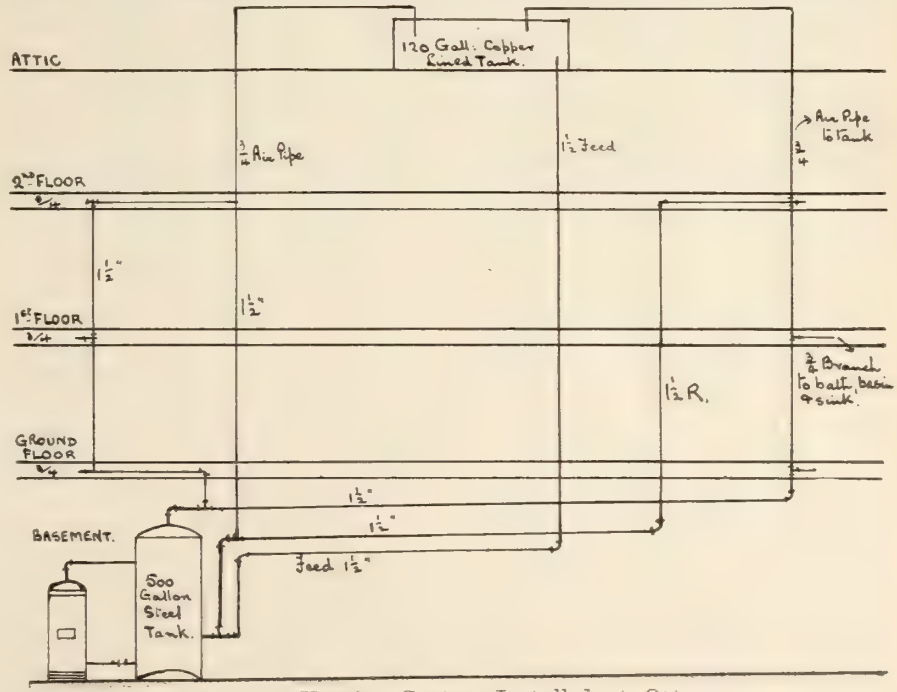
R. McDougall Mfg. Co., pumps, Galt.

Brown-Boggs Co., snips, Hamilton, Ont.

James Morrison Mfg. Co., smoke testing machines, Toronto.

Climax Specialty Co., testing plugs, Seneca Falls, N.Y.

This list could be extended indefinately. If there are any special tools required we will be glad to advise where same can be secured.—Editor.



Layout of Heating System Installed at Ottawa.

Gossip of the Plumbing and Heating Trade

Items Gathered in all Parts of Canada—Letters Invited From Subscribers, Giving Particulars Regarding Changes in Firm Names, Contracts Secured, Novel Methods of Advertising or Other News—Photos of Anyone or Anything Connected With the Trade Also Welcomed.

Ducharme & Co., plumbers, Montreal, have been registered.

P. Larcheveque & Co., plumbers, St. Vincent de Paul, Que., have been registered.

F. H. Tallman, hardware merchant, Red Deer, Alta, has sold his tinsmithing department.

Ben Noble, of Noble & Rich, London, spent last week in New York, calling at Toronto en route.

W. D. Muckler, plumber, Oshawa, was in Toronto this week. He says building is very active in his town.

The Cunningham Hardware Co., New Westminster, B.C., was awarded a contract for supplying that city with water pipe this year.

The Miller Co., brass manufacturers, will begin operations at London shortly, and when working at full capacity will employ 75 to 100 men.

Saskatoon plumbers went on strike on June 7. The men demand an increase to 55 cents per hour. They have been receiving 45 and 50 cents.

A. Williams, purchasing agent for The James Morrison Mfg. Co., Toronto, has given up his position to go west. His place is being filled by F. E. Kinzinger.

C. F. Lewis, Toronto, has moved his plumbing shop from 120 Sheridan Avenue to 202 Royce Avenue. He has also put in a stock of hardware, paints and lighting fixtures.

Neil McArthur, master plumber, North Bay, was in Toronto last week, buying two cars of heating and one of plumbing supplies for small contract work in his home town. North Bay is growing some.

Ald. Harry Mahoney has been a near-mayor during the past fortnight, he acting as chief magistrate of Guelph during the absence of the mayor. Harry says he likes the soft seat and may lay claim to it when a new occupant is required.

A deputation of master and journeymen plumbers urged on the Ottawa board of trade the appointment of an assistant to the plumbing inspector on the ground that the volume of building makes the inspection work too heavy for one man to attend to.

The Pease-Waldon Co., of Winnipeg, have recently secured contracts to install heating and ventilating systems in schools situated in Edmonton, Stettler, Man., Somerset, Man.; Sperling, Man.; Starbuck, Man.; Tabor, Alta., and St. James, Winnipeg.

John E. Wilson, was awarded the contract for supplying St. John with 40 main stop cock vault tops, at $6.45 per set; 60 cast iron sewer manholes, at $6.25 per set; 20 catch basin frames, at $2.45, and a quantity of core castings at 3½ cents per pound.

Harry Nobbs, for the past few years manager of the Metallic Roofing Co., Winnipeg, has become manager of the metal department for Dunn Bros., builders, of that city. At present Mr. Nobbs is in St. Boniface hospital recovering from an operation for appendicitis.

McMurphy & Craig have formed a new plumbing and heating firm at New Westminster. Mr. McMurphy was connected with the Vanstone Heating and Plumbing Co. for a number of years, and Mr. Craig was the plumber at the asylum for several years. Both are well known in that city.

Alfred Smith, an employe of E. F. Geiger, plumber, Victoria, B.C., had a narrow escape with his life, when a gasoline tank which he had just started to repair exploded. He was in the act of soldering a hole in the metal and carried a small plumber's torch too near the bunghole. The fire that followed did damage to the extent of $500.

The National Brass Mfg. Co. is a new concern just incorporated by the Dominion Government. The head office is at Montreal, and the capital of the company is placed at $50,000. The company will manufacture and deal in metal goods, gas and electric fixtures, plumbing supplies, sanitary appliances, etc. The incorporators are R. T. Heneker, A. H. Duff and W. S. Johnson, Montreal.

The Saskatoon plumbers lockout or strike is over and the Saskatoon Hardware Co. have taken back a number of men needed for immediate requirements. The union plumbers and steamfitters held a meeting at the beginning of June, and decided to submit a sliding scale of from 50 to 55½ cents an hour (they had been receiving 45 and 50 cents up to that time). On June 6 a strike was declared. This has now been called off.

W. Shives Fisher, president of the Enterprise Foundry Co., Sackville, N. B., returned home from a two months' trip to western Canada, during which he visited Saskatoon, where his firm are interested in the Enterprise Hardware Co., which is doing a large wholesale business in heating goods, stoves and ranges, and plumbing supplies.

This has been the busiest season the Kingston plumbers have had in many years, the result of the board of health calling upon property owners to put in the modern conveniences in all houses within a certain area. June 1 was the time first allowed by the board for the completion of the work, but the rush has been so heavy, that they found it necessary to extend the time another month. There are about seven hundred privy vaults in the prohibited district.

The George R. Prowse Range Co., Montreal, recently incorporated, will take over the manufacturing and hardware business of the late Geo. R. Prouse, of that city, and will manufacture stoves, laundry ware, and filters, besides plumbers' and steamfitters' supplies, as well as carry on a plumbing, gas and steamfitting business. The capital of the new company is $50,000, and the incorporators are Chas. C. Prowse, Wm. P. McVey, Aime Mallette, S. W. Cuthbert, and A. Verschuere, all of whom were employed by the late Mr. Prowse.

The foundry convention held last week at Detroit chose Pittsburg as the convention city for 1911. This covers the American Foundrymen's Association, the American Brass Foundrymen's Association, the Foundry Foremen's Association and the Manufacturers' Supply Association. Major Joseph T. Speer, president of the Pittsburg Valve, Foundry & Construction Company, and until recently president of the Pittsburg Foundrymen's Association, was chosen president of the American Foundrymen's Association, Dr. R. G. Moldenke was re-elected secretary-treasurer.

Charles Landon, a well-known Brockville, Ont., tinsmith is in custody charged with attempting to poison Thomas Sheridan, of Sheridan & Power, one of his employers. Three weeks ago Mr. Sheridan, who took his lunch at his place of business, discovered a peculiar taste to his tea, and threw it out. The same thing happened the following day and on two or three later occasions when it was decided to investigate. Henry Dyer, a constable, was placed in concealment in the building, and through an opening, claims he saw Landon take from his pocket a paper and shake its contents into the tea. The two following days warm water alone was left in the tea bottle, and Landon's arrest followed. Samples have been sent to Prof. Ellis, of Toronto, but as yet no report

has been received, and Landon is in jail. He was a quiet, inoffensive man with a highly respectable family, and his friends are at a loss to account for the strange action with which he stands charged.

Tales of the Trade

A Montreal plumber had an amusing experience last week with a lady customer who thought to do things cheaply. She was moving into a new house and asked the plumber what his charge would be for connecting boiler and putting up gas fixtures.

"Forty cents the hour," was the answer, and that's low enough if anybody should ask you.

"Dear me," said the lady, who evidently considered him a robber, "I know a man who says he will do it for 25c."

"Let him have the job, then," replied the plumber.

Some time after the landlord of the house into which the lady moved came to the plumber and asked him to go and look at the boiler, as it was reported to be leaking badly, and which surprised him as it was a new one. On the plumber going to the house he found that not only had the boiler been strained by the connections being forced, but that the cheap man had cut the gas fixtures so short that they were too close to the ceilings and had to be taken down and lengthened.

The lady of the house thought this was bad enough, but when she was told that whatever damage was done to the boiler she would have to make good her distress was keen. Then to add to it all when the cheap man presented his bill he said: "25c for me and 25c for my man"—the aforesaid man being a small helper.

When the lady came to put two and two together—a long drawn out job and unsatisfactory at that, with permanent disfigurement of the fixtures and a badly used boiler, at 50c an hour and one quick job and no after trouble at 40c—she came to the conclusion that going to the cheapest market was not always the best course to pursue, especially in plumbing.

HOW HE GOT HIS FIRST JOB.

"Norman MacLean," printed in large letters on the glass of a window containing a fine display of plumbing goods, looked as if he had gotten along well in the world. He wasn't in the office when I called, but I had just got seated when an old journeyman came in from the workshop. I chatted with him a few minutes and the talk drifted to the "boss" and how he had got his first start in life.

I hadn't heard how Norm got his first job, and was interested in hearing the old man tell the story. Norm couldn't and wouldn't plow and left for town to find a job. On reaching town he at once made his way to the largest plumbing shop where he approached the "boss." The boss was not in a particularly quiet frame of mind. His "What on earth are you good for?" somewhat surprised Norm, and his answer somewhat surprised the boss. "I want to be foreman here, but since that position is filled, I'll be content to be one of his assistants."

The boss looked him over and hesitated. There was some more talk ending with the boss telling him, "If I call you back before you reach the pavement, I'll give you a job."

Norm was resourceful. He walked out of the little shop office and started for the door. Then he hesitated. He had an idea. On the floor, lying close to the door was a new die stock that had just been delivered.

Norm looked back at the little office saw the foreman was looking, picked up the die stock on his shoulder and ran for the door. Of course, the fore-

man was after him in a second, shouting to bring the die stock back.

Norm walked back, took off his coat, looked at the boss, and asked what he would do. The boss looked him over for the second time and said: "Youngster, I'll hire you," and that is how Norman MacLean began his career as a master plumber.

CHANGE IN AGENCY.

A. J. Jackson, for the past two or three years Ontario sales agent for the Amherst Foundry Company, Amherst, N. S., with warerooms at 178 and 180 Victoria Street, Toronto, has left the city and is no longer connected with the Amherst Foundry Co.

Wm. Knight and C. A. Lusby, of Amherst, have been in Toronto during the past fortnight straightening out the affairs at the agency and after looking the ground over they have appointed the Monarch Brass Manufacturing Company, Toronto, as agents for Ontario.

The Monarch Brass Company have had offices and warerooms at 278 Dundas Street and for the present these offices will be continued along with the premises on Victoria Street.

Mr. Knight has returned to Amherst but Mr. Lusby will remain in Toronto for another week or ten days. They report a very fine trade in enamelware in all parts of Canada and say that in British Columbia particularly there has been a remarkable increase.

E. B. Plewes, manufacturer's agent, Winnipeg, who represents the Amherst Foundry Company in Manitoba, was a visitor in Toronto this week on his return from a trip to Amherst.

CARTING AND BAGGING CHARGES.

The plumbing supply men of Ontario held their quarterly meeting at Detroit on Monday and Tuesday last, June 13 and 14. The Toronto members of the party left that city on Saturday, arriving in Detroit on Sunday morning.

The principal business discussed had reference to packing and cartage, and it was decided that commencing on July 1 a minimum charge of ten cents would be made on all deliveries of goods in Toronto. The supplymen hold that of late the cartage question in Toronto has become an important and expensive one, running into thousands of dollars during a year. In the past, it has been held, plumbers generally had their own horses and rigs and were able to send for goods required quickly, but now having given up these rigs some supply houses have to use several delivery wagons to handle the local business.

Another matter decided was the placing of an 18 cent charge per bag on malleable fittings sent to points outside Toronto. This charge, too, will come into force on July 1.

There were about 15 representatives in all in attendance at the meeting: the Standard Sanitary Mfg. Co., The James Morrison Brass Mfg. Co., The James Robertson Co., and the National Plumbing Supply Co., Toronto; Canadian Brass Co., Galt; Empire Mfg. Co., London; Canadian Wolverine Co., Chatham, and The Ideal Mfg. Co., Detroit and Windsor.

The latter company acted as host to the visitors and entertained them during their stay in Detroit, Jas. P. Feeley, jr., secretary of the company, personally looking after his guests. The visit to Belle Isle and luncheon at that park on Monday were greatly enjoyed.

New Buildings, Water and Sewerage Systems

Opportunities Offered by Municipalities and Private Enterprise for New Plumbing, Heating, Ventilating or Sanitary Systems—Work Being Undertaken in Every Section of the Dominion.

Municipal Undertakings.

The Claresholm, Alta., $15,000 waterworks by-law was carried.

Welland ratepayers will vote on a $13,000 sewer by-law on June 20.

The by-law to provide $5,000 for waterworks extensions at Galt, was carried.

A $11,000 water mains by-law will be submitted to the St. John, N.B., ratepayers.

A $500,000 sewer by-law will be submitted at the next meeting of the Vancouver Council.

The contract for c.i. pipes and valves for Quebec City, was awarded to L. H. Gaudry & Co., Quebec.

The by-law to authorize the expenditure of $30,000 for sewage facilities at Peterboro, was carried.

Coldwater, Ont., citizens authorize the expenditure of $23,000 for the installation of a gravity system of waterworks.

A by-law to raise money to carry the sewerage system along Richmond Ave., Victoria, B.C., has been passed by the city council.

Welland Water Commissioners have recommended to council the submitting of a by-law to raise for waterworks improvements $60,000.

The Canadian Woodpipe Co.'s tender of $16,397.50 for 17,000 feet of water main was accepted by the North Vancouver Board of Control.

Contracts for the construction of sewers amounting to $159,385 were awarded yesterday by the Montreal Board of Control to M. Dineen and L. Giguere & Co.

The contract for sewers at St. Catharines was awarded to Thos. Riley for different streets as follows: $764.50, $670.00, $478.00, $1,007.50, $810.00, $875.00.

The Point Grey, B.C., council are considering projects for an appropriation of $500,000 to cover the cost of reservoir and site and the laying of mains. A by-law for $250,000 will also be introduced for sewage works.

Chipman & Power, of Toronto, have been engaged as designing and superintending engineers in connection with the proposed waterworks and sewerage systems at Dauphin, Man.

The Winnipeg Board of Control have awarded another large supply contract for the new civic power plant to the Canadian Westinghouse Co., of Hamilton, for the equipment of the sub-station.

The Fort William city council awarded the contract for water pipe for city work to the Canada Iron Corporation, the price for the ordinary pipe is $33.75 per ton and for "specials" $60 per ton. The tender of the Kerr Engine Co. for hydrants and valves and of the Canadian Fairbanks Co. for two large hydrants were also accepted.

Public Buildings.

Plans have been secured for an isolation hospital at Moose Jaw.

A new Roman Catholic Separate school will be erected at Amherstburg, Ont.

A by-law has been passed at Arnprior, Ont., to raise $14,000 for school purposes.

It is probable that the Department of Education will establish a Model School at Orillia.

The Bell Street Methodist Church, Ottawa, will build a brick edifice, to cost $20,000.

The plans for a new citadel building for the Salvation Army at Kenora, Ont., have been completed.

Wellington county council have decided to erect a new courthouse at Guelph, to cost, $60,000.

Tenders will be called shortly for a new Presbyterian church to be erected at Duart, Ont.

Jay & Sons, Oshawa, have been awarded the contract for the erection of two schools at Lindsay.

The design of S. B. Bird, of Vancouver, has been selected for the new hospital at Ladysmith, B.C.

The contract for the new Presbyterian church at Merritt, B.C., has been let to Hyland & McLean.

The Canadian Pacific Railway Co. will spend $10,000 in alterations to the old St. Lawrence Hall at Montreal.

The civic authorities will agitate for the erection of an additional Provincial Normal School at Sydney, N.S.

Over $97,500 for the erection of three new schools at New Westminster, will be raised by debentures shortly.

Plans for a new theatre at Brandon have been prepared by Architect Sinclair. Estimated cost, $30,000.

The Belleville Board of Education will ask the council for an appropriation of $50,000 for a collegiate institute.

G. T. Martin, is the architect in charge of the erection of the Protestant General Hospital at Smith's Falls.

A by-law will be submitted to the Virden, Man., ratepayers asking $25,000 for a new public school.

Plans of the new B. C. E. R. depot at New Westminster have been prepared and tenders will be called shortly. Cost, $80,000.

At a citizens' meeting recently held at Hamilton, it was decided to erect a Sick Children's Hospital in memory of the late King Edward.

The plans and specifications for the proposed North End school at Halifax prepared by Architect C. W. Fairn, have been completed.

The contract for building the new St. Dunstan's school, at Fredericton, has been awarded to Fred T. Ryan, of Fredericton. The figure is about $30,000.

Tenders addressed to F. A. McCully, secretary, Moncton, N.B., will be received until June 17 for the construction of a school, known as Victoria School Annex.

A by-law will be submitted on June 17 at Moose Jaw, to erect a produce hay and stock market, $30,000; an isolation hospital, $15,000, and a sub-fire station, $10,000.

The C. N. R. and C.P.R. have agreed as to building a union depot at Regina. Plans have to be filed with the railway commission, after which work will probably be started.

A $90,000 addition will be built to the Eastern Block, Ottawa, for the accommodation of the Department of Internal Affairs, the Dominion Police and the Treasury Board.

Tenders for ventilation and other mechanical equipment for the asylum building at Ponoka, Alta., are being received until June 30, by the Department of Public Works, Edmonton.

Alderman John B. Jones, who was elected to the St. John city council for the first time in April last, has brought up a matter that has been mooted from time to time in the council and by the local press, namely, the establishment of public sanitaries or "Comfort Stations." Heretofore the matter has been passed over, but it has now been referred to the city engineer to bring in a report. It is proposed that at least two of these stations should be provided, one in or near Market Square, and the other in the vicinity of King Square.

General Building.

H. Kellert & Son, Montreal, will erect a warehouse.

Lacey Bros. will erect a business block at Sydney.

Cameron & Heap will build a warehouse at Weyburn, Sask.

Wm. Cousins will build a business block and hall at Lethbridge.

M. Lechtzier will build a warehouse at Winnipeg to cost $15,000.

The City House Furnishing Co. will build a warehouse at Montreal.

The annex to the Mona Building at Fort William will cost $10,000.

Frank Darling & Co., Vancouver, will build a warehouse to cost $40,000.

J. G. Kinnel secured a permit for the erection of a terrace of dwellings at Winnipeg to cost $10,000.

Tenders are being called for the erection of the Trustee Company's new office building at Vancouver.

The contract for the big Clemen office at Winnipeg has been let to C. H. Simpson. The total cost is about $85,000.

The contract for the Sinnot block at Lethbridge was awarded to Doyle & Thomas. The block when finished will cost $80,000.

Recent building permits issued at Vancouver include: Adamson & Mann, $35,000; W. M. Aconley, dwelling, $5,500; Peter Agren, dwelling, $7,000; C. R. Gilbert, apartment house, $11,800.

The building outlook in Halifax this season is not very bright. There is only one large contract on, and that is for the Y.M.C.A., costing upwards of $150,000.

PLUMBING AND HEATING MARKETS

MONTREAL.

June 14.—Supply houses report that business is swinging in splendidly, while prospects for the fall seem to point more than ever to record business. "How we shall meet it," said one manufacturer, "we don't know, because the pressure now is very great." Judging from the orders some stocking up is being done, no doubt in the fear that a heavy demand may produce a shortage.

Soil pipe is most prominent, and moving out in heavy loads, enamelware is also selling briskly. Radiators and boilers are being put in as fast as they are delivered.

No change in prices are reported. Lead pipe is steady after the slight reduction. All the way round there is a good tone, and there is little complaint. Prices on radiators and boilers are being maintained better than ever.

Soil Pipe.—There is no falling off in the volume of business, in fact the reverse is the case. Orders are coming in from every direction and the pipe is wanted in a hurry. Prices are unchanged, and we quote light 60 off, heavy 70 and 10.

Lead Pipe.—The recent decline in lead pipe and waste seems to have stimulated business, as heavier orders are reported. A disposition on the part of some buyers to stock is noted. We quote pipe and waste at 30 off, traps and bends 50, calking lead 5c per lb.

Solder.—A good movement is noted in solder, with prices unchanged. Stocks are being augmented. We quote Half and Half 20c, wiping 18½.

Iron Pipe.—With other lines iron pipe is showing good strength. The market is firm, and we quote : ¼-in. black, 63 ; galvanized, 48 ; ⅜-in. black, 59 ; galvanized, 44 ; ½-in. black, 69 ; galvanized, 59 ; ⅝ to 4-in. black, 71½ ; galvanized, 61½.

Radiators and Boilers.—These lines are moving splendidly, and there seems to be more unanimity as to the holding of prices. We quote : Steam boilers, 60 and 5 ; hot water boilers, 50 and 10 ; wall and hot water radiators, 50 and 7½ ; steam radiators, 50 and 7½ per cent.

Scrap Metal.—The market is quiet with little scrap offering. Prices are unchanged, and we quote : Heavy copper wire, 11½c ; light copper bottoms, 10c ; heavy red brass, 10c ; heavy yellow brass, 8c ; light brass, 6¼c ; tea lead, 2½c ; heavy lead, 2¾c ; scrap zinc, 3c ; cast iron, $16.

Metals.—The metal situation has shown little change. Trade is very active. We quote : Tin, 35c ; copper, 14c; imported lead, $3.75 ; domestic lead, $3.60.

TORONTO.

June 14.—While there is much more strength to the plumbing markets there have been as yet no advances, nor have there been any price changes at all, although some were expected.

There is still a good steady call for enamelware and iron pipe. In fact plumbing supplies generally are satisfactorily called for. Soil pipe has taken another brace and is as active just now as during April.

The unsteadiness of heating prices is yet apparent, but most of the houses prefer to let business go by rather than meet cut quotations offered by new concerns entering the field. Heating contractors state that as the season advances a greater pressure of work is apparent, and this pressure may do more than anything else to help steady prices.

Enamelware.—The demand for enamelware is very great. There is a good indication of the growth of the country not only in the number of enamelled articles being sold, but in the greater demand for better quality goods. One local supply house which bought up about 500 high grade closet combinations sold 100 of them by the time they were delivered by the railway, and the whole 500 inside a month—and this was one line only. Baths, too, of the better grades are being more called for, though many people yet want "price" goods. Sinks and lavatories are good sellers, and laundry tubs are fair. Prices are steady with the situation better for a firm market.

Soil Pipe.—There has been a revival of demand for soil pipe during the past fortnight, and while it may not last far into the summer there are indications that sales should be fair for the next couple of months. Manufacturers are satisfied with the way stocks are going, Prices are unchanged. Light pipe is 60 and 10 off ; medium and heavy, 70 and 10 ; and 7 and 8 inch pipe, 50 p.c. Fittings remain at 70 and 10 off.

Iron Pipe and Fittings.—Judging from the size of orders for iron pipe at present going June will show a great record in this line. Manufacturers last winter prepared for good sales this summer by making great quantities of pipe, and supply houses have accordingly been better able to handle business promptly than in recent years. Still there have been some lowering of stocks in jobbers' hands, though the scarcity of small pipe is not expected to be so evident as last summer. Prices are firm and unchanged. The discounts on malleable fittings range from 37½ to 40 p.c., with cast iron fittings from 60 to 65 off. Bushings, standard, are 70, and malleable are 65 p.c. Nipples are 75 and 10 ; headers, 60 ; and flanged and malleable-lipped unions, 65 p.c. Galvanized pipe is $6.35 and black pipe $4.70 per hundred feet, 1-inch size. A charge of 18 cents is made for bagging malleable fittings to outside points.

Lead Pipe.—This line is a trifle slow at present, even though the low quotation of 30 off seems likely to induce buying for stocking up. Traps and bends are 50 off. Calking lead is still around 4½c to 4¾c a pound.

Solder—Half-and-half runs from 18½c to 20c a pound, and wiping from 17c to 19c. This line is somewhat stronger, the large stocks on hand only preventing any advance in prices. Trading is good.

Brass Goods.—Manufacturers are decidedly busy on all kinds of brass goods, and while no price changes have been effected, the market is very firm—probably more so than any other one line among plumbing supplies. High grade compression is 60 per cent.; medium, 65, and standard, 70. Fuller work is at 70 off.

Boilers and Radiators—No change in conditions or prices have occurred since last issue. While cut prices still exist they are not so annoying, for the majority of houses prefer letting business go by rather than meet cut rates. The advancing season, too, is helping out the situation by making business plentiful for all houses. Heating engineers report briskness in specifications. Hot water boilers and radiators are 50 and 10, though cut prices run to 70 off.

Metals.—Tin, 35c ; copuer, $13.75 ; lead, $3.75 (dom.), and $3.85 (imp.) per hundred pounds, are slightly easier quotations compared with last issue.

Old Metals.—Lead, 2½c ; zinc, 3½c ; copper, 10c for graded ; iron, ½c.

MOUTH-PIECE FOR GAS WORKERS.

A pure air mouth-cap to be worn by gas workers when entering cellars filled with gas from leaking pipes, when tapping main pipes in awkward places, where it is otherwise impossible to get away from escaping gas, has been invented.

A slight pressure of air is maintained within the cap by means of fresh air supplied by bellows, and gas is thereby kept from entering it. The cap is adjusted firmly, but not too tightly, over the nose and mouth, so that the excess air may escape around its edge. The cap is connected to the bellows by a rubber tubing.

The "HOFFMAN"

¶ Have you a catalogue of the Hoffman Heater Company? If not, write for catalogue and prices.

¶ We make the BEST and most complete line of Gas Water Heaters of any manufacturer in the market.

¶ Try our line and satisfy yourself.

THE HOFFMAN HEATER COMPANY

Factory and General Office: LORAIN, OHIO, U.S.A.

A NEW VALVE

JENKINS BROS.'

GUN METAL AND IRON BODY

GATE VALVES

"TYPE K"

Special Features:

Highest Quality Steam Metal. Perfect Interchangeability. Double Compensating Bronze Wedges. Metal Gland in Stuffing-Box. Great Strength of All Parts. Carefully tested to 250-lbs. Water Pressure

UNRIVALLED IN DESIGN AND WORKMANSHIP

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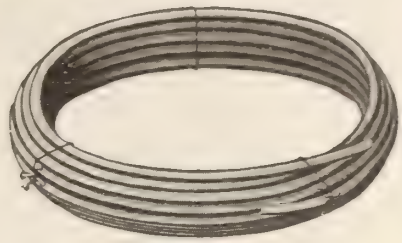

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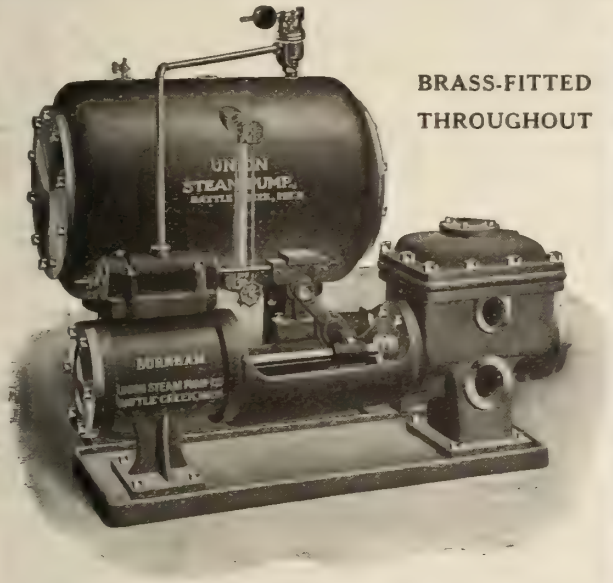

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TRAVELLER who has reached limit present position, connection with plumbers and hardware jobbers from coast to coast, open to improve position. Box 1002, PLUMBER AND STEAMFITTER, Toronto. (12)

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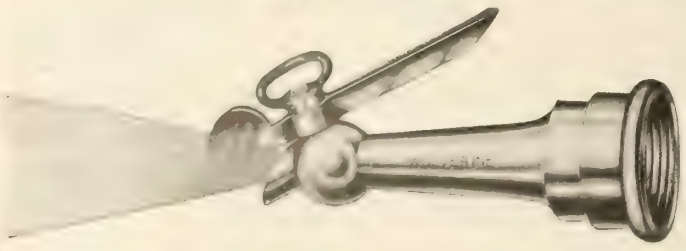

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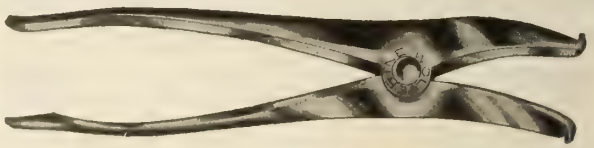
No obstruction in Waterway, or back pressure on hose.



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DIRECTORY OF MANUFACTURERS

Plumber and Steamfitter receives, from time to time, enquiries for the names of manufacturers of various lines. These enquiries come from firms who usually intimate they have looked through Plumber and Stamfitter but cannot find any firm advertising the line in question. In many cases these firms are anxious to secure the information at once. This page enables manufacturers to keep constantly before the trade lines which it would not pay to advertise in larger space.

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You'll make money in handling them. All standard sizes.

Electrical Specialties, Limited
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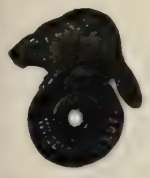

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Established 1880
NEITHER FICTITIOUS NOR EXORBITANT
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GEORGE LANGWELL & SON, Makers, MONTREAL

Will Hold Up a Shelf
That's what a shelf bracket's for. For this purpose there can be NOTHING BETTER, NOTHING CHEAPER than the BRADLEY STEEL BRACKET. It is well Japanned, Strong and Light. The saving on freight is a good profit aside from the lower price at which the goods are sold. Order direct or through your jobbers.
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The Canadian Bronze Powder Works
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GENUINE

Armstrong Stocks and Dies

ARE THE BEST.

Catalogue on request.

The Armstrong Mfg. Co.
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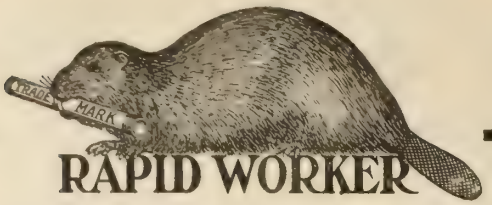

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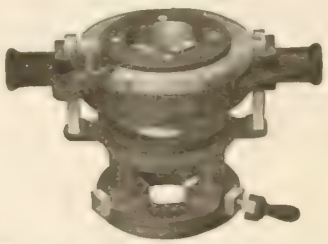
One man with a Beaver Die Stock is worth two or three men with any other Die Stock made.

"Beaver" Adjustable Die Stocks

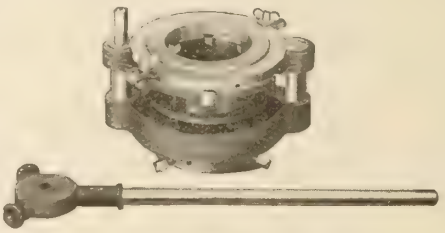
No loose Bushings or loose Dies on these two tools and they cut ⅛, ¼, ⅜, ½, ¾, 1, 1¼, 1½, 2 and 2½ inch pipe.

No. 6, threading ¼, ⅜, ½, ¾ inch, comp'ete

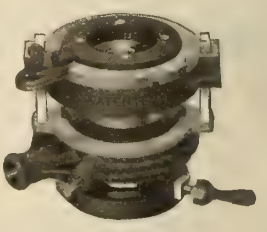
have cut the cost of pipe threading in two because they will thread all sizes of pipe without changing dies. They are built on the receding principle which positively enables one man to thread any size of pipe and produce absolutely tight joints for all work, including hot water. They save the time formerly used up in changing dies and looking after loose parts and eliminate all of thread-stripping when backing off.



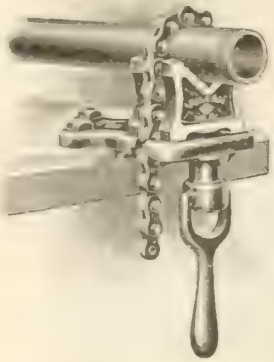
No. 25A, threading 1, 1¼, 1½, 2 inch pipe. A boy can operate it.

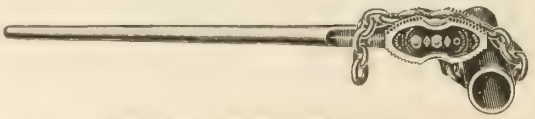


No. 60. Uses two sets of dies. One set cuts 2½, 3, 3½ in.; the other cuts 4, 4½, 5, 6 in.; they are inserted without removing any parts.

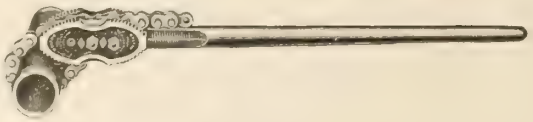


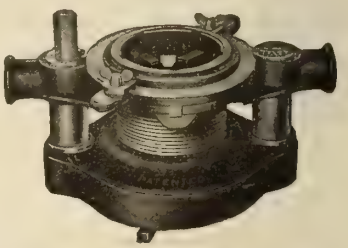
No. 26A. Cuts 1, 1¼, 1½ and 2 in. pipe. A boy can operate this tool.





Pipe Vise. Takes pipe ⅛ to 4 inch.





No. 41. Cuts 2½, 3, 3½ and 4 inch pipe.

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With Non-receding Dies.

Made in FOUR Different Sizes.

Each size cutting two sizes of pipe without changing dies.

A strong, durable tool, threading two sizes of pipe without changing dies. Particularly recommended for those who want a Die Stock of just the required size and weight for two sizes of pipe.

NET PRICES TO CONSUMERS:—

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No. 122, 1 in. - 1¼ in.	6.00.	" " " " " " "	2.00
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on the side of efficiency and reasonable cost by recommending and installing the

SOVEREIGN MONARCH RADIATOR

No modern radiator has so many points in its favor. Here are a few of them:—It will save labor, lessen cost of household repairs, and minimize insurance premiums. It will increase the value of the property in which it is installed from 10 to 15%, and will minimize housecleaning by doing away with all dust and ashes. Send for booklet and full particulars.

The arguments in favor of handling the "Sovereign Monarch" cannot fail to convince you.

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Plate F
199

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Dimensions Lavatory 18 x 21 Oval Bowl 11" x 14" Back 8"

We have a large number of other styles including many new designs to select from--For which see our catalogue F now ready for distribution.

We are also manufacturers of full lines of Bath Tubs, Shower Baths, Lavatories, Sinks, Laundry Trays, Wash Sinks, Range Closets, and Urinals, etc., etc.

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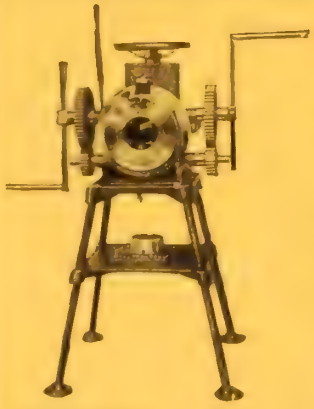

Loew Victor Pipe Machine

completely covers the needs of the plumbing and heating contractor in pipe threading.

Its usefulness in this field is of the widest, and the returns from the money invested will soon exceed the original amount.

Let us tell you just what the Loew Victor will do for you

Write.....

The Loew Manufacturing Co.
CLEVELAND, OHIO

Agents for Ontario and Western Canada, The General Supply Co., Ltd., 219 Bank St., Ottawa, O

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Will Tell You That They Use

DART UNIONS

If you require a tight joint and one that will always be tight, there is nothing quite equal to the DART UNION, and they are most economical.

Your jobber can supply you —if not we will.

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PLUMBER & STEAMFITTER

and Sanitary Engineer of Canada

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Vol. IV, No. 6 (New Series). Publication Office : TORONTO, JULY 1, 1910. Old Series, Vol. XXII. No. 13

Architects, Builders or Steamfitters?

Which one of these three classes has the most influence in selecting the make of boilers, radiators, soil pipe, brass goods, enamelled ware and other goods installed by plumbers and fitters in any new houses which are being built?

A prominent steamfitter in Canada stated recently that two years ago he had handled one make of boilers and installed them during 1908, to the exclusion of all other lines. He had some trouble with this manufacturer and in 1909 decided to recommend another make of boilers, with the result that during the whole season of 1909 only two boilers of the kind he had handled exclusively the preceding year were installed by him.

With two exceptions he had switched every order.

This proves conclusively that the plumber and steamfitter has sufficient influence in the majority of cases to instal whatever make of goods he thinks best. This is as it should be, for when a plumber or fitter undertakes a heating job, or any other work, he takes the responsibility for it giving satisfaction, and builders and owners will usually, therefore, give him a good deal of latitude in the selection of the various brands.

The most economical method for manufacturers and jobbers to reach the plumbing and steamfitting trade throughout Canada and acquaint them with the merits of their goods and the facilities they have for supplying their wants promptly is through the advertising columns of PLUMBER AND STEAMFITTER.

For full information regarding rates write.

Plumber and Steamfitter

and Sanitary Engineer

MONTREAL TORONTO WINNIPEG

Beaver Brand

Cast Iron Enamel Ware

Famed for its Smoothness, Colour and Wear

This Cut Illustrates Our

Beaver Brand Roll Rim Sink

This is one of our leading and best known lines, which has given satisfaction throughout the Dominion. Our new and up-to-date plant is unrivalled for the production of Bath Tubs, Slop Sinks, Kitchen Sinks, Laundry Tubs, Lavatories, Closets, etc. Customers can rely on having their orders promptly filled. Every article of "BEAVER BRAND" manufacture is guaranteed.

Amherst Foundry Co., Ltd., Amherst, N.S.

ONTARIO SALES AGENT:

MONARCH BRASS MFG. CO., LTD., 178-180 Victoria Street, TORONTO

MARITIME PROVINCES	MONTREAL, P.Q.	WINNIPEG, MAN.	VANCOUVER, B.C.
All Jobbing Houses	All Jobbing Houses	E. B. Plewes, 120 Lombard St.	A. O. Campbell

Peerless WATER SERVICE SYSTEMS

Provide perfect protection from fire and a reliable supply of water under pressure for every other purpose required.

Peerless Systems are made in Canada and are shipped to the plumbing trade complete in every way and ready for installation.

We are the largest manufacturers of tanks in Canada and we guarantee that Peerless Systems will do their work with unfailing reliability and the utmost economy.

WRITE FOR ILLUSTRATED CATALOG

National Equipment Co., Ltd.

Lombard Street . . . . Toronto, Ont.

We make all kinds of **Tanks** for every kind of purpose

IF YOU ARE REQUIRING **LAUNDRY GOODS**

your own interests and those of your customers are fully safeguarded if you handle "Crown" Brand goods. In the manufacture of these goods only the greatest care, highest skill and best materials are employed; they are the 'very last word' in laundry goods. If you are interested, write for prices.

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"Kerr" Radiator Valves

on your heating work, and your valve troubles are over

We charge the price and furnish the reliable goods

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Kerr Engine Co., Limited

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The climax of 30 years' manufacturing and selling experience in Chain Pipe Tools.

BECAUSE in the reversible jaws—readily changed when teeth first in use wear—you get the service of two tools at the price of one.

BECAUSE of the fastening of jaws to handle with two bolts the full strength of tool is provided for in one, and the other may be used as an emergency bolt, and repairs may be made while at work in case of accidents.

BECAUSE the bite of teeth is a distributed pressure and does not tend to crush pipe; no pipe-tearing or jaw-wearing strain on "straight-cut" teeth

BECAUSE every part of tool is fully guaranteed and interchangeable. No tools similarly made ever approached the "Vulcan" class of Chain Pipe Tools in strength or utility.

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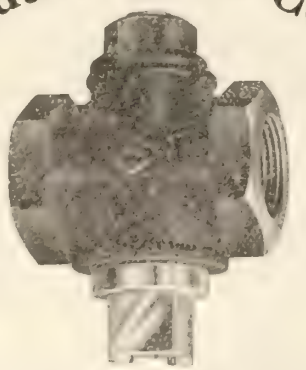
Standard Iron Cocks



We carry a large stock of Iron Cocks in all sizes from ⅛in. to 4in. inclusive, in the following styles:

1—All Iron
2—Iron with Brass Washer
3 Iron with Brass Plug
4—Iron with Brass Plug and Washer

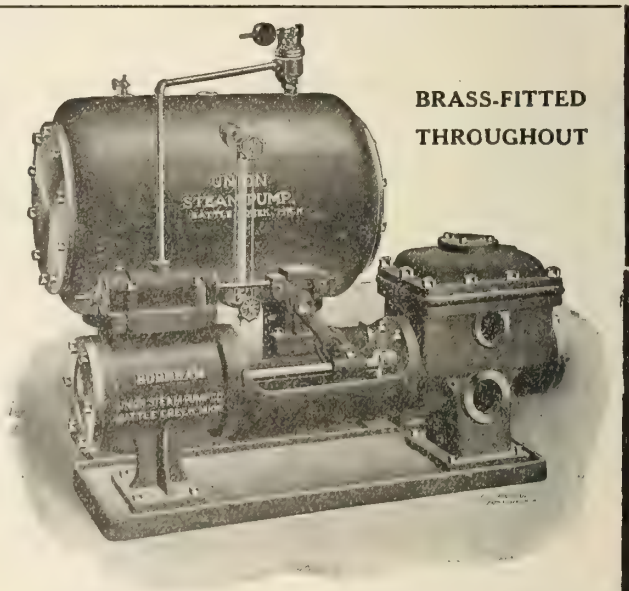
The *All Iron Cock* should not be used for steam or water, as the plug will stick in the barrel. We recommend the brass plug for steam or water.

All cocks are tested to 175 pounds hydraulic pressure before leaving the factory and are guaranteed against defects.

Manufactured by

Fittings Limited

Eastern Warehouse
MONTREAL, QUE. OSHAWA, ONT.



BRASS-FITTED THROUGHOUT

The BURNHAM will not short stroke—and for this reason it is the most suitable pump for HOT WATER SERVICE.

You can always depend on the BURNHAM for handling the condensation from Heating Apparatus, Dryers, etc., etc. Standard sizes in stock.

Darling Bros., Limited

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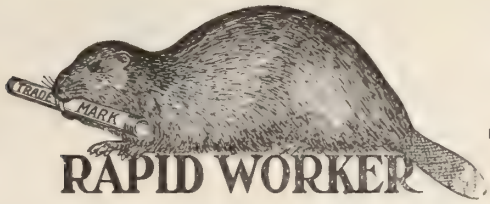


RAPID WORKER

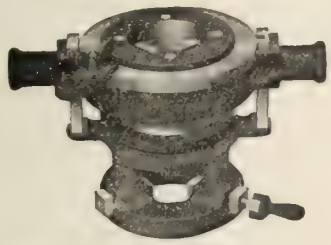
One man with a Beaver Die Stock is worth two or three men with any other Die Stock made.

"Beaver" Adjustable Die Stocks

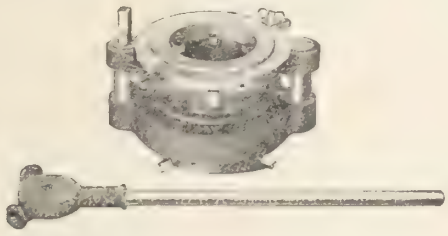
No loose Bushings or loose Dies on these two tool and they cut ¼, ⅜, ½, ¾, 1, 1¼, 1½, 1¾ and 2 inch pipe.

No. 6, threading ¼, ⅜, ½, ¾ inch, comp'ete

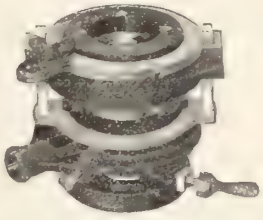
have cut the cost of pipe threading in two because they will thread all sizes of pipe without changing dies. They are built on the receding principle which positively enables one man to thread any size of pipe and produce absolutely tight joints for all work, including hot water. They save the time formerly used up in changing dies and looking after loose parts and eliminate all of thread-stripping when backing off.



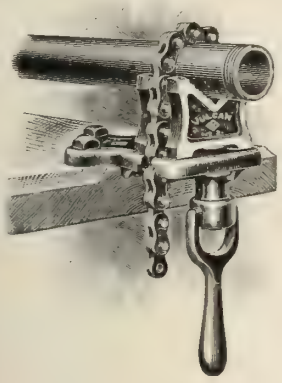
No. 25A. threading 1, 1¼, 1½, 2 inch pipe. A boy can operate it.



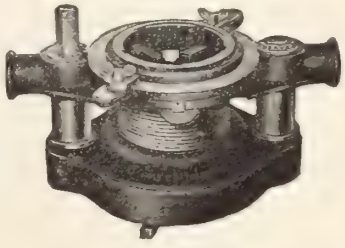
No. 60. Uses two sets of dies. One set cuts 2½, 3, 3½ in.; the other cuts 4, 4½, 5, 6 in.; they are inserted without removing any parts.



No. 26A. Cuts 1, 1¼, 1½ and 2 in. pipe. A boy can operate this tool.



Pipe Vise. Takes pipe ⅛ to 4 inch.



No. 41. Cuts 2½, 3, 3½ and 4 inch pipe.

THE WARREN ADJUSTABLE DIE STOCK

With Non-receding Dies.

Made in FOUR Different Sizes.

Each size cutting two sizes of pipe without changing dies.

A strong, durable tool, threading two sizes of pipe without changing dies. Particularly recommended for those who want a Die Stock of just the required size and weight for two sizes of pipe.

NET PRICES TO CONSUMERS:—

No. 120,	¼ in. - ⅜ in.	$5.00.	Extra Dies, cutting two sizes each (also ⅛), Right or Left $1.50
No. 121,	½ in. - ¾ in.	5.50.	" " " " " Right or Left 1.60
No. 122,	1 in. - 1¼ in.	6.00.	" " " " " " " 2.00
No. 123,	1½ in. - 2 in.	7.00.	" " " " " " " 2.00

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BORDEN CANADIAN COMPANY, 66 Richmond St. East, Toronto, Ontario.

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and Sanitary Engineer of Canada

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TORONTO JULY 1, 1910

GAS STOVES AS A SIDE LINE.

Plumbers who have not tried to develop a business in some side line are neglecting opportunities which offer a good margin of profit besides making possible an expansion of their business which will enable them to turn over much of the detail of bookkeeping and shop management to the shoulders of a bookkeeper who can also look after the sale of such lines as gas stoves and lighting fixtures.

In most of the towns and cities throughout Canada, and particularly in Ontario, natural or artificial gas can now be secured at a reasonable rate and gas ranges are rapidly supplanting the old style coal and wood ranges. This business belongs naturally to the plumber and it will be his if he goes after it intelligently.

In future issues of The Plumber and Steamfitter the practical experiences of master plumbers who have taken up the sale of gas stoves and other side lines will be given and suggestions made as to how progressive plumbers can build up a larger business by taking advantage of the opportunities about them.

CONVENTION WILL BE A SUCCESS.

Some good preparatory work has been done for the National Master Plumbers' Convention which is to be held in Toronto, August 31 and September 1 next and its success is already assured.

It will be the largest convention held since the Ontario convention at Guelph in 1905, and if the master plumbers of Canada answer, the call of Dame Opportunity, who is now pulling at their front door bells, the coming gathering will be the most important trade gathering yet held in Canada inasmuch as it will mark the beginning of a new era in association work in Canada.

The National Executive Committee has placed the responsibility for the arrangements for the convention on R. J. Shannon, vice-president for Ontario, and he will have the co-operation of a committee working with the master plumbers' section of the Toronto Retail Merchants' Association. The committee will be named this week, it is expected, so that everything can be arranged well in advance of the meeting to be held the end of next month.

The plan suggested, which has met with general approval so far, is that St. George's Hall, Elm Street, Toronto, be secured and an exhibition of plumbing and heating apparatus be held on the ground floor during the two days of the convention. Meetings of the convention would be held in another hall in the same building. Manufacturers and supply houses will not be asked to contribute for the entertainment of the delegates except by making a display of their goods in a space allotted to them for which a nominal charge will be made.

For the first evening (Wednesday) a first class smoking concert will probably be held in the exhibition hall, this providing an excellent opportunity for the masters and supply men to fraternize together. For Thursday evening the suggestion has been made that a section of the grand stand at the Toronto Exhibition be reserved for the delegates to the convention and the supply men, both of these events to be financed by the association out of the revenue from the trade exhibition. In this way the convention will be conducted in a business way without the passing of the hat, while manufacturers and supply men, who desire to assist in a reorganization of the masters, will have an opportunity to assist on a straight business proposition.

The business of the convention should be confined to two or three main items of business. First in importance is the proposed change in name to the Canadian Society of Sanitary and Heating Engineers and the securing of a Dominion charter. Next is the appointment of a committee to work with the Provincial plumbing by-law in drafting a provincial plumbing by-law which will regulate plumbing work in small towns and in such unprogressive cities as Hamilton and London, where greedy property owners prevent the establishment of plumbing regulations. And of equal importance is the selection of a corps of officers who will put vigor behind their work and bring life into the new organization.

All credit to the officers who have helped to keep the ship afloat during and since the troublous times of four years ago. They have proven their interest in trade betterment and will be only too glad to give place to others if they are assured that the work will be carried on for the best interests of the trade.

All master plumbers and steamfitters desiring to see trade conditions improved should take advantage of the cheap railway rates available to Toronto during the convention, the dates selected being during the first week of the Toronto Exhibition.

THE SHOP APPEARANCE.

Why is it that the average plumber pays so little attention to the appearance of his shop? The window either looks like a junk shop, or a few bathroom articles are displayed, arranged in any fashion, and so covered with dirt that the thought of putting them into a house appalls the neat housewife.

If no customer ever called upon a plumber; if his shop was like a machine shop, used only by mechanics,

the need of cleanliness and order would not be so important. But the case is different. Personal impressions have a great influence on business. One of the most popular of the many charges levied against the plumber is that he is unequalled in making a mess about a house, and when a customer enters a dirty shop he receives verification for this charge. If a plumber keeps his own place in such a state what will happen when he gets into a customer's ? Thus an impression is formed which does great injustice to the man—and the customer probably places the job elsewhere.

The whole idea of plumbing and general bathroom work is to represent the utmost cleanliness, and yet the plumber does his best by his want of care of his own stock and the appearance of the shop, to off-set this. Where the actual work is being done it is not necessary to be so very spick and span, although even here there is a wonderful difference in the way two plumbers will have their place looking, but in the front of the shop where the customers are, and in the windows, the greatest attention should be paid to appearance. It is not difficult to do this. Very few shops are without a side door where all the work can go through and the journeyman also, so that the front can be kept clean. And during dinner time, if the boys are sitting round having a smoke let them do so at the back.

So far as display is concerned it is an easy matter to arrange an attractive window that not only sets up the plumber in the minds of the observer as a man of high standing in his work, but also brings in business. To make a window look like a bathroom is not difficult. With wall paper representing tiles, a mirror or two, bath, closet, bright bathroom fittings and a few artificial palms, the plumber has a window that seldom needs changing—only keeping clean. This latter is imperative. Better have the window looking like a junk shop which few passersby will care to look at, than a display which draws sufficient amount of attention to disclose the dirt. Keep the fixtures brightly polished, and in the best of condition, and it will be surprising the attention that the window will create. The bathroom now is looked upon as one of the most important rooms of the house. "Give me a nice living room and bathroom and I am satisfied," said one man, and this is the general opinion. The drawing-room or bed-room is a secondary consideration.

Inside in the shop there need be no elaborate display, unless the plumber has the means at his disposal. A counter kept clean, a desk, and chair that can be sat upon without fear, are quite sufficient. "That is all very well," said one plumber when spoken to upon the subject, "for the big men, but I only do a small jobbing trade and I have but a little window and a small shop." Quite so, but this jobbing work brings in an unusual amount of customers, probably, in proportion, more than the large contract work. Even in a small shop it is not difficult to keep the front of it in good shape and free from dirt, and to confine the bench work to the back. And if the window is too small for any bathroom effect, it can be made to look well by grouping some brass lines and other supplies in a neat way. All that is necessary is to show that attention is paid to the window, and that the plumber takes some pride in it. There is no doubt that the average plumber would find it profitable to pay attention to many things which he now thinks are unnecessary. He must advertise, and neat display is the cheapest and the easiest form of doing so.

OFFICIAL NEWS

N. A. M. P. & S. F. of CANADA

OFFICERS 1909-10

President,—Joseph Laurier, Montreal. Vice-Pres.,—G. H. Cooper, Toronto.
Treasurer,—H. Mahoney, Guelph. Secretary, - H. W. Munday, Montreal

Provincial Vice-Presidents,—Nova Scotia, Frank Powers, Lunenburg; New Brunswick, Wm. Watson, Moncton; Quebec, J. E. Walsh, Montreal; Ontario, R. J. Shannon, Toronto; Manitoba, R. L. Beattie, Winnipeg; Alberta and Saskatchewan, E. J. Young, Calgary; British Columbia, John Colbert, Victoria.

Chairmen of Committees,—Legislation, H. A. Knox, Ottawa; Sanitary, P. C. Ogilvie, Montreal; Apprenticeship, J. Griffin, Montreal; Essay, E. Russell, London.

Next Convention will be held at Toronto, August 31 and Sept. 1, 1910.

LARGE NUMBER WILL ATTEND.

Between forty and fifty master plumbers in Ontario have already written R. J. Shannon, 1233 Queen Street West, Toronto, in reply to his vice-presidential letter asking if they will attend the national convention to be held in Toronto, August 31 and September 1 next. And only one of the lot writes that he won't be on hand.

The editor of The Plumber and Steamfitter fully expects that from 150 to 200 master plumbers will be in attendance at the convention.

ENTHUSIASM DEPARTMENT WORKING OVERTIME.

Editor Plumber and Steamfitter,—I beg to acknowledge receipt of your letters of the 6th inst., and note August 31 and September 1 are selected as the best days to hold the convention. I have mentioned the fact to our association, and every member here would like to see the convention an unqualified success, and anything that can be done here to ensure that end the officials have only to suggest it and we will do our level best.

Regarding the date of the convention, I think August or September are very poor months for the purpose, as at that time the trade is exceedingly busy, and it is most inconvenient for anyone to attend who is any distance from the place of meeting. However, our association will be represented at the coming convention, and at that time will raise the question of holding future conventions some time in May or June, just before the really busy season begins.

The idea of having exhibits of plumbing and heating goods at the convention is a good one; besides being a source of revenue to the association, it is of much practical benefit to the trade, and I trust the Toronto Exhibition will not interfere with the manufacturers in placing a good display at the convention.

Am glad to hear Mr. Shannon is so enthusiastic; our association needs enthusiastic officials especially, and it will keep the enthusiasm department working overtime for some time to come to bring about the complete organization of our Dominion Association, and I trust the coming convention will do much towards that end.

Our association has had a fairly successful year, although one of our members kicked over the traces this spring (again), but at the present time, I believe, regrets the move, and is willing to become one of us again, proving the benefits of being a member of the M. P. A. and incidentally the disadvantages of not being a member.

We petitioned the city council this summer to revise the plumbing by-laws, and to appoint a plumbing inspector, all our members are working to have it put through, so that we will be enabled to bring the standard of the work up to where it belongs.

J. MARSHALL.

Port Arthur, June 25.

Winnipeg School Sanitary and Heating Equipment

Fine Plumbing Work Done in new Greenway School—Heating and Ventilating System Includes a Vacuum Cleaning Apparatus—One of the Most Up-to-date Instalations in Canada done by Thomson & Homer, Winnipeg.

During recent years municipal governments have been paying much attention to the structure and equipment of their public buildings. In western Canada particularly there is great emphasis placed upon the appearance and quality of civic structures, due to the extreme competition for development that is

R. THOMSON, Winnipeg,

Head of the firm of Thomson & Homer.

continually going on between the various civic centres.

Perhaps there is no line of trade that is being stimulated to a greater extent by this condition than the plumbing, heating and sanitary engineering. Not only is the public construction work very heavy, but building operations are so extensive everywhere, in all classes of work, that plumbers do not know the luxury of an idle hour.

The vast amount of work has tended to induce plumbers to specialize on certain classes of work. Many, and these are in the majority, specialize on house work. Others specialize on store and apartment house instalations. Other plumbers go in exclusively for public building equipment.

At the present time there is an enormous rush in school building everywhere in the west. In Winnipeg alone during the past two years, four of the finest school buildings to be found in Canada, have been completed.

The equipment of these schools is so extensive and the future prospects are so great that Thomson & Homer, a Winnipeg plumbing and heating firm, have made a specialty of school work.

Within the past year these plumbers have installed complete equipments in three large schools in Winnipeg, one school in Saskatoon and another in Yorkton, Sask.

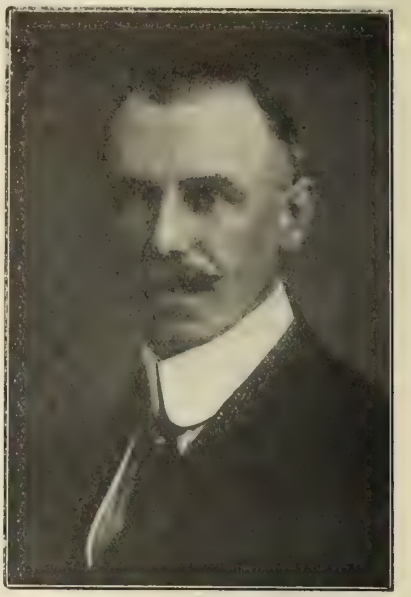
Plumbing in Winnipeg School.

The Greenway school in Winnipeg, which was completed last month, is said by authorities to be the most magnificent in every respect of any school building on the continent of America, Thomson & Homer secured the contract to install complete plumbing, heating, ventilating and vacuum cleaning plants in this building. The work is finished and has passed inspection with great satisfaction.

The plumbing work is chiefly all in the basement of the building, where there are twenty-five closets, ten urinals, two bath tubs, six showers, six wash bowls and one pedestal drinking fountain.

Pedestal Drinking Fountain in Greenway School.

The boys' lavatory room is about 20x20 feet, and contains ten closets and ten urinals. The closet partitions are black slate placed three feet apart. The bowls are porcelain and are equipped with a lever flush. The closets are ventilated into an air space behind the



J. E. L. HOMER,

Who has Charge of the Saskatoon end of the Business.

wall, which space is exhausted by an electric power fan, which delivers the air through the roof. The closet floor is raised six inches above the main floor of the lavatory, and the entire floor is made of red unfinished tile. The ten urinals are partitioned and back-walled with black slate. The waste and supply pipes on both urinals and closets are of finely finished nickel, and the whole appearance is very fine. Three holes had to be drilled through each slate back of the urinals for the supply and waste water pipes. In the same lavatory are two large porcelain wash bowls with spring nickel equipment.

Shower Baths for Pupils.

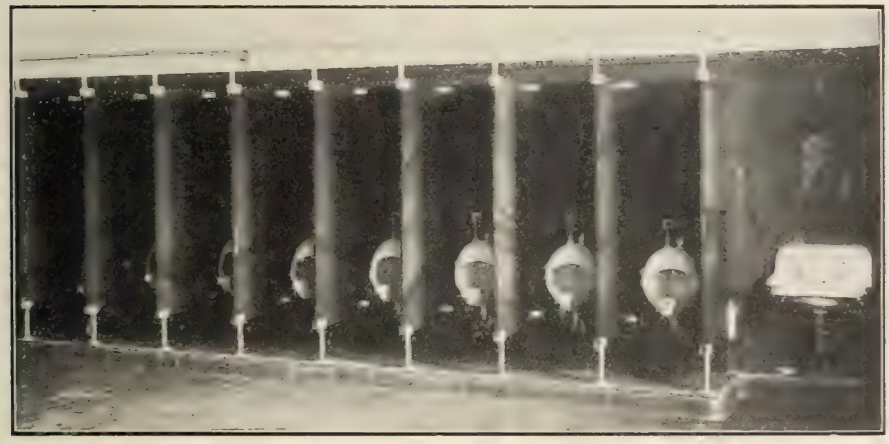
The next room to the boys' lavatory is the boys' shower and bath room. There are three shower spray equipments with swivel nozzles operated by a small level in slate wall at the back. The feature of these showers is that the temperature is regulated by the caretaker from the boiler room, so that there is no danger of scalding in the shower room. Opposite the showers

are six frame boxed dressing rooms, equipped simply with a seat and clothes hooks. At one end of this room is a bath tub in a frame enclosure.

The girls' lavatory consists of fifteen slate enclosed closet bowls, equipped the same as those in the boys' lavatory.

Boys' Closets in the Greenway School.

Leading from this lavatory is the entrance door into the girls' shower room, which is exactly the same as the boys' except that an additional closet bowl is placed beside the bath tub. It is interesting to note that this is the only school in Winnipeg where bath tubs are installed, and it is said that there are very few in Canada.



Boys' Urinals in the Greenway School.

The walls of both lavatories are of finished white tile, and the ceiling is designed metal.

Drinking Taps and Fountain.

There are three floors in the building and a hall 18 feet wide on each floor including the basement. In each hall there is placed two porcelain drinking taps and one pedestal drinking fountain. In the office of the principal on the first floor there are installed a newly patented automatic flush closet and a large wash bowl. There is also an equipment on the wall of this office which indicates the amount of steam, temperature, air pressure, and city water pressure.

Heating and Ventilating System.

The heating system is very complete and consists of two 70 h.p. tubular boilers and pipes with heavy asbestos covers. In the boiler room there is a small furnace for heating the water for the showers and bath in summer, this is done by the boilers during the winter months.

There is also a small blow-off tank in the boiler room to cool the steam before it is transmitted to the sewers.

The ventilating system is very complete and of the most modern design. The air is brought in through large windows from the south of the building, passed through a series of steam heating pipes, and on through a water washing spray where all impurities are carried down to a basin below. The air is then distributed through the building in large pipes by means of an electric power fan. Each room is equipped with a temperature control instrument which can be set at any dreired temperature, and which controls the steam flow into each register.

Vacuum Cleaning System.

The vacuum cleaning system is a new equipment for school buildings. An electric suction pump is placed in the basement, and a single steel pipe runs up through all the floors. A rubber tube may be attached to this pipe and the rooms on all the floors are thoroughly cleansed by the operation of the pump below.

Lavatory Exhaust in Greenway School.

Members of the Firm.

Robert Thomson, senior partner of the firm, is justly proud of the work in this building and has tenders now pending for similar work in two schools to be erected here within the next year. Mr. Homer, who resides in Saskatoon, where they have an office, is taking charge of much outside work. Besides the three cities mentioned above the company have done work in Calgary, Moose Jaw, Scott, Sask., and Kenora,

Ont. All work receives the superintendency of Mr. Thomson.

In the illustration showing Thomson & Homer's staff at Kenora, Mayor Rideout, Kenora, is on the extreme left, Robert Thomson, of Thomson & Homer, is next, and Mr. Burnett, manager of the hotel, is the portly gentleman with the white vest. The rest will be recognized as journeymen without difficulty.

Thomson & Homer's Staff after Finishing a Plumbing and Heating Job at the Tourist Hotel, Kenora.

THREE-INCH SOIL PIPE FOR WATER CLOSETS.

Thomas M. Landers in an address before the American Society of Inspectors of Plumbing and Sanitary Engineers discusses the difference in cost, danger of pipes being too large and liability of small pipes to syphon or choke.

I am aware of the fact that many of the advocates of the use of three-inch soil pipes have made numerous tests, in many instances have had such systems installed and that these systems have been used for several years with good results; yet, I must say from my own experience, I am not in favor for many reasons of reducing the size of soil pipes from four inches to three inches. From an economical standpoint the difference in cost of installation between a four-inch and a three-inch soil pipe to the owner is of very little significance compared to its many objectionable features.

It is a well-established fact that by reducing the size of soil pipe to three inches the danger of siphonic action upon the seals of all smaller traps is greatly increased. The siphoning of these traps even under our present system, is the very thing that we all know we have been endeavoring to prevent by the very expensive, and I must say experimental, method of back-venting. This has itself utterly failed in its object of preventing siphonage in many instances. This occurs especially where there is an excess of frictional resistance produced by numerous back vent fittings that cannot be avoided in installing the work. Therefore, for this reason alone I should deem it unwise to favor a soil pipe less in size than four inches for water closets, for, according to my judgment, it would be inconsistent with good plumbing practice to produce just such a siphonic condition as we have been trying to prevent.

Now, what may come next in the minds of those who are recommending the three-inch soil pipe proposition, and it may not be long before we will hear them express it, is "Why let us advise that all waste pipes be of a sufficient size so as to be a protection against siphonage, or let us increase the size of all vent pipe connections, so as to overcome the danger of trap siphonage produced by the introduction of three-inch soil pipes?" This would be adding still more expense to the already bungling method of back-venting. A soil pipe can be too small for the service it is to render as well as too large and there is a limit to all things. Some of you may differ with me, but I think that a four-inch pipe is the smallest in size to give satisfactory results.

In my opinion, it is high time that plumbing construction should have passed such an experimental stage and the work simplified in many respects, which from my own experience has been fully demonstrated.

Another very objectionable feature is the liability to chokage of three-inch soil pipes and fittings. Every one knows that in the construction of plumbing systems certain fittings must be used to suit the conditions. If these fittings are but 3 in. you then increase the danger of stoppage.

I realize that many will say that a water closet bowl being much smaller than four inches, there is no need of the soil stack being four inches; that whatever would pass through the closet bowl would pass out of the three-inch pipe. I certainly must differ on that point. From my experience there are many things that will pass a four-inch fitting unobstructed that will surely obstruct a three-inch fitting. Take, for instance, a collection of rags accidentally thrown into a water closet bowl. The bowl being of a very smooth earthenware, the probabilities are that many if not all of these rags will pass out into the soil pipes, but when they come in contact with the numerous three-inch fittings, especially on horizontal runs, the trouble will begin.

I admit that under certain conditions three-inch soil pipe may be used with good results. In some instances where great care is taken in looking after the plumbing fixtures, so as to prevent the pipes being choked, it might be satisfactory, but if such a system were to be used to take the place of four-inch soil pipe under all condition it would certainly cause in my own city endless trouble.

LEGAL STATUS OF A BATH.

Judge Babcock of the U. S. Court of Appeal was recently called on to fix the legal standing of a bath.

The point came up in a bankruptcy case during a discussion as to whether certain evidence was admissible or not, the point being raised that a Pittsburg water-heater was a luxury and not an essential and therefore evidence concerning its purchase or payment for same could not be submitted.

Judge Babcock's ruling on this question is a marvel of conciseness and logic. He says: "In this state of society a water-heater is a necessity. Anything suitable to the station of life of a party is a necessity, unless it be of such a class of things that is a luxury. Hot water in a house, like suitable household furniture, is a necessity.

A bath is a necessity, and hot water is essential to a bath. A necessity is not, however, synonymous with an indispensable.

This decision will be of great interest to the plumbing and heating fraternity, not only because of the clearness of the reasoning, but for its beneficial effect on the trade.

Wells & Emerson, Port Arthur, have taken a number of contracts for the Canadian Northern hotel, the Prince Arthur, including the copper work for the roof, and the ventilating system for the kitchen.

Handling Heating System Condensation Economically

H. L. Peiler Describes Some Interesting Features in Connection With the Heating of the New Intercolonial Railway Shops, Moncton, N.B., Handling Condensation, Feed Water Control.

The present article proposes to deal with the method employed to return the water of condensation to the power house and back into the boilers independently of the feed-pumps.

Indirect radiation is used for heating all the various buildings with the exception of the stores and office building, which is heated by direct radiation.

A reference to the accompanying plan will make clear the general system employed. In the boiler house itself are two large fan stacks, from one of which the warmed air is forced through a duct for distribution in the freight-car repair shop, while the other supplies warm air to the blacksmith shop. Two more fans supply the large machine shop and the engine erecting shop. A fifth supplies the passenger car repair shop, a sixth the passenger-car paint shop, and a seventh fan-stack heats the planing mill.

Live steam is, of course, carried to all these points, and some of the distances are considerable as the longest run, namely, to the passenger-car paint shop, is 1,200 feet from the power house. Each Sturtevant fan is operated by steam, the fan engine exhausting into the first two sections of the stack, while the rest of the stack is supplied with live steam at a pressure of 50 to 60 lbs., reduced from the boiler pressure of 125 lbs.

Besides the steam used for heating purposes, high pressure steam is also required in the engine shop for the lye-pots, and in the power house for operating the large air compressor and the fire pump, and steam is also required in the gas-producer house, for heating and other purposes.

The problem of handling the condensation throughout this large plant, with all its various pressures, high, medium and low, and the different purposes for which steam is being used under practically every condition save that of actual vacuum, presented many interesting features which required careful consideration.

It was decided to adopt a suggestion to handle the whole plant automatically with steam-traps, and Bundy trap representatives were called upon to lay out a return system, which was eventually installed and has now been in

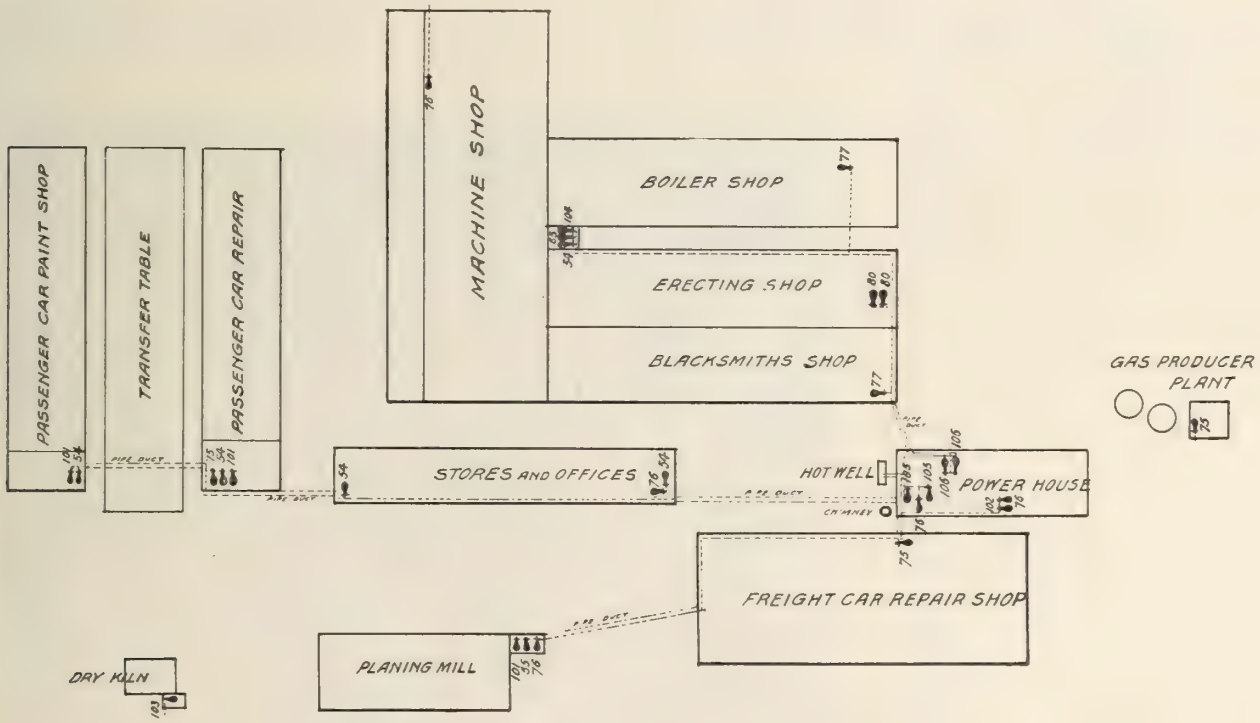


Fig. 1.—Plan Showing Layout of Traps, I. C. R., Moncton.

successful operation for considerably over a year.

Beside each fan stack two traps are placed, one a Bundy steam-operated lifting pump trap taking the exhaust condensation from those coils that are fed by the fan engines, the other a Bundy tank or separating trap on the coils supplied with live steam. These traps do not discharge into the same return line, as the exhaust condensation contains a percentage of cylinder oil and is therefore, pumped to the general hot-well, where it is purified before being handled by the boiler-feed pump.

All the live steam returns from the 40, 60 and 125 lbs. lines, all the drips of the supply-mains, the lye-pots and the direct radiation, are trapped with Bundy traps of the standard tank type, which discharge overhead in the boiler-house into a closed receiver-tank situated over the boilers. From this receiver the water flows by gravity to two large return traps which discharge it automatically into the boilers. In designing this system, the greatest difficulty lay in determining with accuracy the quantity of water that would have to be handled by the traps. The general conditions of concrete and glass construction, combined with forced draft in the indirect heating system, pointed to a high prospective condensation ratio in the piping. The government engineers had only very incomplete data furnished by the blower manufacturers, and it was anticipated that the two 600 h.p. Babcock & Wilcox boilers would be ample for heating purposes

besides furnishing power for the compressor and pumps. On the other hand the condensation engineer calculated that the heating apparatus alone would condense almost as much steam as could be furnished by these boilers, and the trap system was based upon his calculations which were afterwards proven to be correct. The two return traps, each with a capacity of 250 pounds of water per operation, and returning to the boilers under normal activity, (that is dumping once per minute) are able to return 30,000 lbs. of water per hour, and can work 50 p.c. overload if necessary. They are busy traps during cold weather, and have frequently returned to the boilers, water equivalent to an evaporation of 1,200 h.p. It was early found necessary to add two more boilers of 250 h.p. each, and the four boilers are just comfortably able to take care of their load.

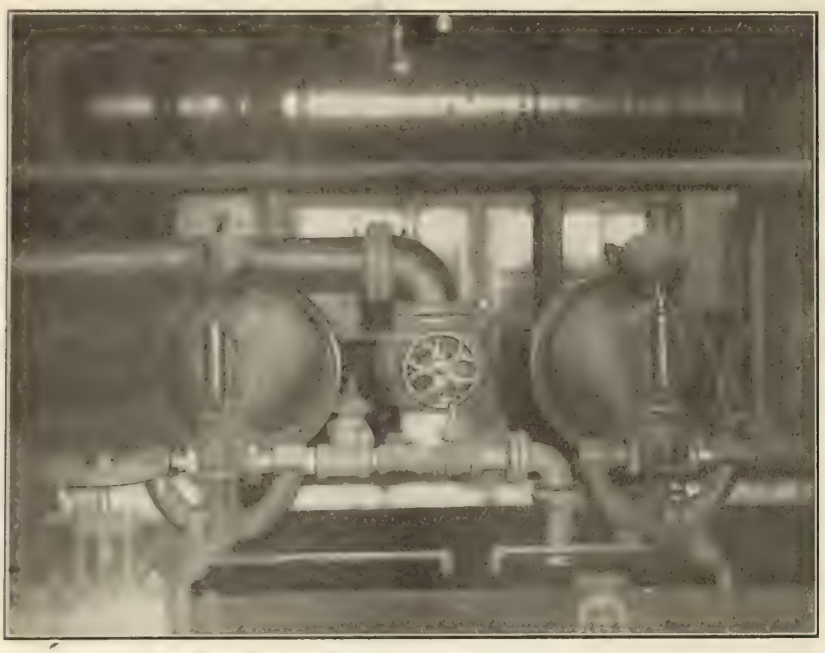


Fig. 2.—An Installation of Bundy Traps, I. C. R., Moncton, Showing Connections.

Lye-pots and Dry Kilns.

Among the curiosities of condensation met with in this plant, was that that of the enormous amount of water condensed by the coils in the lye-pots. It was found necessary to instal on 400 feet of 1¼ inch pipe, a trap with a full valve opening of 1 inch. When one takes into consideration that the initial pressure on this piece of piping is 125 lbs. and further remembers the large quantity of water that can be forced through an opening of one inch diameter with this pressure, facts are presented that make all ordinary rules for calculating condensation ratios look very ridiculous.

Another interesting feature is the method of taking water from the dry-kilns which are supplied with steam by an independent boiler beside the kilns. Here, instead of placing a separating trap on the coils, these discharge into a small closed receiver which has a discharge pipe running almost to its bottom. The pressure on the receiver forces the water up this discharge pipe to a Bundy return trap over the boiler, which in turn puts the water back into the boiler. A continuous circulation is thus maintained from the boiler through the kiln coils and back into the boiler again, although the coils are actually some 12 feet below the water-line of the boiler.

In this whole system there are 30 traps, and the up-keep cost during the 15 months of operation has been less than $3.00. The economy is very marked, the whole arrangement is entirely automatic, the return water reaches the boilers again at an average temperature of about 235 deg. F., and the work has resulted in another practical demonstration that the trap method of controlling and returning condensation, is an economical method of effecting savings in steam-using establishments.

Feed Water Control.

Engineers will probably be also interested in one other feature of boiler-feeding by this system. Each of the B. & W. boilers is equipped with the Berry Automatic Safety Feed Water control, regulating the make-up supply from the feed pump and there was an element of doubt as to whether the admission of considerable quantities of water into the boilers by means of these large return traps would not disturb the water level to such an extent as to interfere with the working of the automatic feed-control. However, it was found in operation that water flowing into the boilers by gravity from the traps seeks its level by first supplying those boilers whose water-line is lowest. There has not been any variation in the water-level of these four boilers since they were installed, and the automatic control of the make-up water works perfectly in conjunction with the traps, even though the latter are feed-

Fig. 3.—Two Bundy High Pressure Taking Condensation From Coils in Lye Pots and Water Heater in Erecting Shop, I. C. R., Moncton, Both Traps Elevate the Water 40' and Discharge to Receive 500' Distant in Boiler House.

ing into the boilers nearly two-thirds of the water which is evaporated.

The instalation was made by Peiler & MacKenzie of Montreal, with the assistance of John Sabin, Boston, supervisor of the Bundy Department of the American Radiator Company.

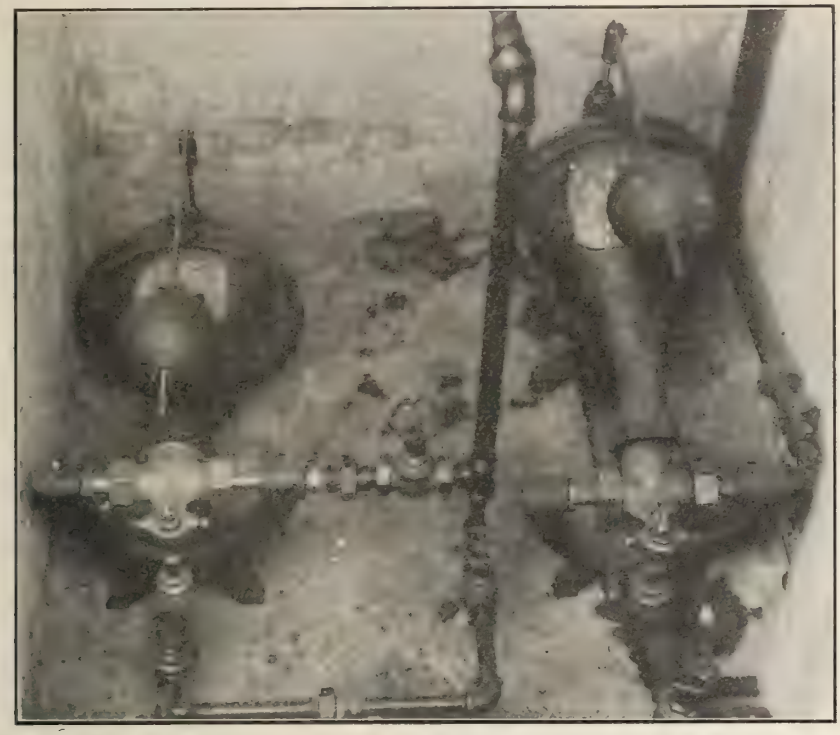


Fig. 4.—Typical Installation Bundy Tank Trap and Lifting Pump Trap in Pit Discharging Condensation from Fan Stack Coils.Planing Mill, Moncton.

PIPING SYSTEM FOR STEAM HEATING.

The accompanying diagram shows a receiver and pump operated by an electric motor for returning the water of condensation from a low-pressure heating system to the boiler when it is impracticable to use a steam pump, and the conditions of installation will not permit a gravity return of the water. This arrangement is frequently used as auxiliary to the regular steam pump and receiver for night service, when the boilers are run at low pressure, or, when the high-pressure boilers are cut out and a low-pressure boiler only is cut in to keep the heating system in operation.

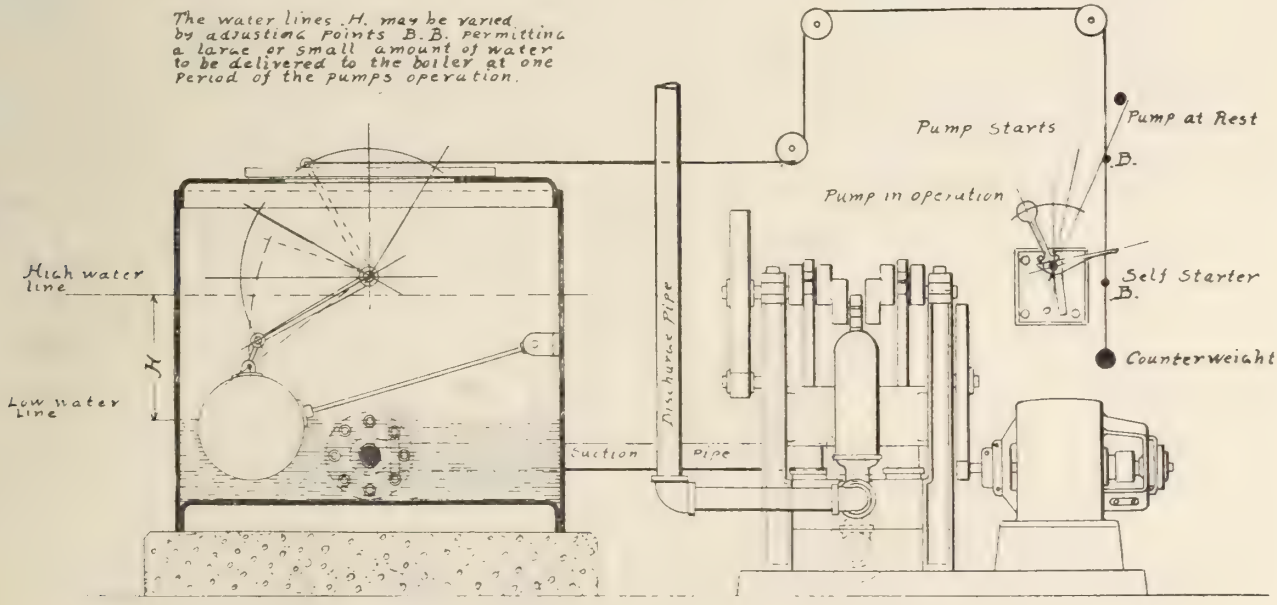
The operation of the apparatus here shown is as follows: The water of condensation returns to the tank, raising the float which operated the arm outside of the tank. This allows the chain with counterweight to bear down on the arm of the self-starter, throwing the switch starting the motor and pump. The pump continues in operation until the water in the tank falls to the low water level, when the switch again operates, stopping the pump, consequently the delivery of water to the boiler.

This action gives the following results: The water in the boiler fluctuates between high and low points equal in proportion to the capacity of the receiving tank. The operation of the pump is intermittent, the periods of operation depending on the amount of water it is desired to deliver to the boiler at one time; this variation in periods may be accomplished by changing the position of the stops, B, B, on the chain operating the self-starter.

For very large systems the operation of the pump may be made nearly constant by providing a pump of just sufficient capacity to handle all the water of condensation under maximum working conditions, and making proper adjustment of the water lines.—J. P. Lisk, in Engineering Review.

ASSISTANT INSPECTOR APPOINTED.

Ottawa master plumbers and journeymen recently requested the board of control to appoint an assistant plumbing inspector, which was badly needed on account of the large amount of work being done in that city.


The water lines H. may be varied by adjusting points B.B. permitting a large or small amount of water to be delivered to the boiler at one period of the pumps operation.
Pump Starts
Pump at Rest
B.
Pump in operation
Self Starter
B.
Counterweight
High water line
H
Low water line
Discharge Pipe
Suction Pipe

Arrangement of Piping Systems for Steam Heating Designed by J. P. Lisk.

TEST OF WEBSTER HEATING SYSTEM.

The accompanying diagram shows the results of a test made of the Webster "Q.R" Modulation System of Steam Heating, recently installed in an office and warehouse building in Montreal. The test being made during seven days of changeable weather last winter.

The advantages claimed by the use of low pressure steam heating, are clearly shown by the diagrams, first, the even temperature that is maintained in all parts of the building with any change of outside temperature. This fact shows the ability to regulate the temperature in any room at the will of the occupant. In order to obtain this result, the Webster Modulation Valve was used on each unit, a cut of which is shown in Fig. 1. It will be noticed that the valve is graduated to four deg. thus if required, diminishing or increasing the amount of heat given off from the radiators at will.

Corresponding to the steam control,

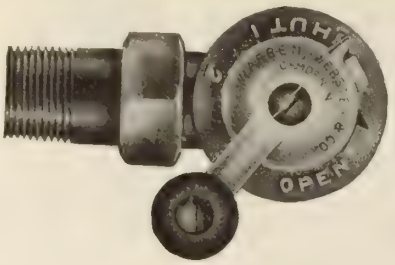


Fig. 1.—Webster Valve Used.

will be noticed the low coal consumption in mild weather, the minimum of which during this test was 300 lbs. in 24 hours, with an average temperature of about 22 degrees Fahr., a fall of temperature to 12 degrees Fahrenheit, gave a consumption of 625 lbs. in 24 hours, i.e., one pound of coal per 57.75 square ft., of surface per hour. This result will show the economy and low cost of working the system.

The system in general is very simple both in its construction and operation, it requiring only the services of a janitor or fireman to keep it in perfect order.

A favorable feature of the system is the absence of "water hammer action." This is owing to the use of the Webster water seal motor on each unit, and at the end of long runs in supply mains.

The building is about 120,000 cub. ft., three storeys high, and is exposed on three sides, the total radiation surface is 1,500 square feet.

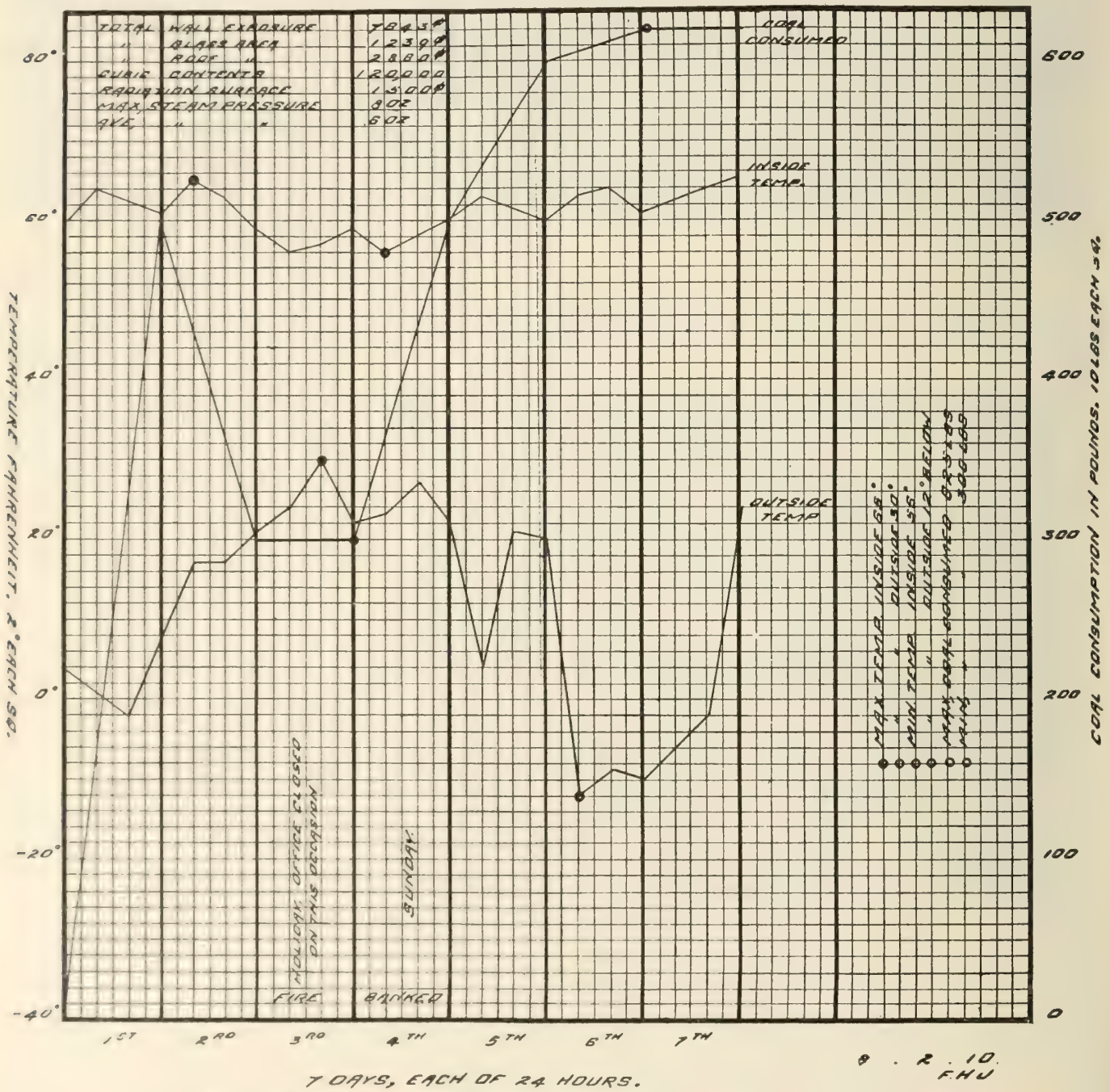

TOTAL WALL EXPOSURE 7850 SQ. FT.
" GLASS AREA 1230 "
" ROOF " 2280 "
CUBIC CONTENTS 120000
RADIATION SURFACE 1500
MAX. STEAM PRESSURE 3 OZ
AVE. " " 6 OZ
COAL CONSUMED
INSIDE TEMP.
OUTSIDE TEMP
TEMPERATURE FAHRENHEIT, 2° EACH SQ.
COAL CONSUMPTION IN POUNDS, 100 LBS EACH SQ.
HOLIDAY AFTER EXCEPTIONALLY MODERATE WEATHER
SUNDAY
FIRE BANKED
1ST 2ND 3RD 4TH 5TH 6TH 7TH
7 DAYS, EACH OF 24 HOURS.
9 . 2 . 10.
F.H.U.

Fig. —Test Diagram of Webster Heating System in Office and Warehouse Building, Mont real.

Present-Day Methods in Using the Journal

A Dumping Ground for Lines That Cannot be Put Through Some Other Book—Object of any System is to Cut Out Unnecessary and Cumbersome Detail — Some Suggestions for the Bookkeeper, by Howard R. Wellington.

The modern journal is a dumping ground for entries which cannot properly be put through some other book of original entry, such as the Cash Book, Sales Medium, or Bill Book. Some of the items which appear in our journal are:—

1. Writing off small ledger balances.
2. Transfer entries, when an amount must be transferred from some account to another.
3. Apportionment of general charges, usually when closing the books, or month by month.
4. Correcting entries which have been charged in error.

The Journal as a Day Book is seldom used to-day, as there are so many short duplicating and triplicating ideas that we only require the book of original entry.

Some bookkeepers use the cash book for a journal as well calling it the "Journal Cash Book" and this may be done to advantage when there is only an occasional journal entry.

Long System for Recording Transactions.

The object of a system in any business is to reduce the amount of detail work, providing, of course, the desired records and statistics can be obtained by the shorter method. Some of the systems installed by so-called systematizers are so cumbersome that it necessitates a great amount of extra work instead of reducing it and we should invariably keep in mind that the shorter method is always the preferable method if satisfactory results may be obtained.

In a large warehouse in one of our largest Canadian cities a system of recording sales is in force, and we will give the different processes necessary to complete the transaction, and also endeavor to show where, at least, one step might be omitted entirely.

Necessary Steps to Complete the Sale.

1. The order is taken on an order card, which goes first to the office, presumably to be O K'd by the credit man.
2. The shipper then carefully enters item by item in a Day Book or Journal, in which he also enters the name of the customer, the date of the transaction, the quantity and price of goods sold, in fact everything necessary to make out the invoice form.
3. The third step is to write his invoice for customer from the Day Book just referred to—invoice being sent with the goods, which is the best method.
4. The name and number of parcels are now entered in a delivery book and customer signs for receiving the goods.
5. The Day Book is periodically taken to the office, probably every morning, and the transactions therein journalized for posting purposes, as follows:—

Jones, Smith & Co., Dr.
To Sales (re Mdse) ac.
(for goods detailed on page 50 Day Book.)

Some merchants might detail these goods again, but it will be seen what amount of needless work it really is.

6. The last step in the transaction is to post the ledger, and from this point forward the steps in any business are similar.

This may seem a very cumbersome system of recording sales transactions, but there is no doubt that in most wholesale and retail business, where the matter has not been thoroughly worked out, there is sure to be some step or possibly more than one step which can be done away with entirely and yet the results and the desired information are entirely satisfactory.

The Shorter Plan.

Just to give some idea of the way in which the above system may be condensed and simplified we would suggest the following:—

1. The order is taken on an order sheet which answers the purpose of a book of original entry, and if goods are delivered, the signature may appear on this order. This sheet is filed away and full particulars as to quantities, prices, date of delivery, etc., may be obtained at any time.
2. While even the posting to the ledger might be done from this order sheet, no saving can be effected, as it is necessary to have an invoice for the customer, and it is safer always to have a carbon copy of every invoice sent out, for posting purposes.

No matter how careful the copyist, mistakes will occur, and besides this an order may not be filled complete, and would not make a very clear copy for posting purposes.

4. Recording sales in retail stores may be recorded in precisely the same way described above by the use of the duplicate and triplicate Cash and Charge Books, and the Journal so far as a posting medium is concerned is not in use at all for the purpose.

The old-fashioned journal entries such as:—

"June 1st, Jim Jones, Dr., to cash Cr.
Amount of account paid to-day in full," or June 2, James Smith Dr., to mdse Cr.
Amount of goods sold to-day
10 bush. oats @ 50c $5.00

are not used in our modern bookkeeping.

This is without doubt the simplest form of journal in use to-day. Every page is ruled up exactly as per copy, and the entries may be made as briefly as possible.

In the first entry, J. Smith owes a small amount which is no good, and this entry is made to balance the account on the books, expense account being debited and J. Smith credited. An explanation should be given after each transaction, as no further record is kept of a journal entry of this nature.

Simple Form for Modern Journal

Date	Dr.	Fols	$	¢	Date	Cr	Fols	$	¢
June 1	Expense ac		1	50	June 1	J. Smith (Uncollectable Balance)		1	50
30	Dept A		175	00					
	" B		250	00	30	Rent & Taxes (Proportion to Each Dept.)		500	00
	" C.		375	00					
30	Advertising ac		50	00	30	Expense Act (Chgd in error) (See Purchase Journal Page 60)		50	00

CAST IRON FITTINGS.

The Standard Fitting & Valve Co., Guelph, whose plant has been shut down for about seven weeks, undergoing a thorough re-organization, has reopened and is now equipped in every way for the manufacture of A1 fittings. The company manufactures only cast iron fittings and do not handle malleables. Their foundry is equipped with modern machines, the mixing being done by expert chemists in order that the material from which the fittings are made will always be of uniform strength. The machine room is also equipped with modern machines, all holes being tapped at one operation, this securing perfect alignment. The company are in a position to supply a product that is purely Canadian, and are looking for the support of Canadian plumbers and fitters.

DON'T CUT PRICES.

Editor Plumber and Steamfitter,—I notice in your issue of June 1 the price of hot water boilers and radiators may take a drop. You say the greatest discount offered is set at 70 for above. Is this right, or should it be 60 per cent. off? I am very much interested in this way: I am figuring against three other shops here for two jobs, amounting to $1,000 thereabout, and if I was positive of the prices going down to 60 I could figure much closer. Can you put me right? The tenders go in and are closed next Wednesday.

SUBSCRIBER.

Ontario, June 21.

Our authority for the article in the June 1 issue of Plumber and Steamfitter was the fact that the one boiler manufacturer was quoting 70 per cent. off in Montreal and 60 and 5 off in Toronto. They had a disagreement with other boiler and radiator manufacturers, who, we understand, are holding prices very firm. This is as it should be, as if one price is quoted to one plumber and a different price is quoted to his competitor, there could be no certainty in taking tenders on heating jobs.

We would strongly advise you to disregard the present cutting and base your tender on the present market price, even though you find it possible to buy for a few dollars less later on. The money you save should go to your pocket as an extra profit, rather than being given away to your customers and in beating down the price of competitive work. If all heating contractors have to figure on material costing them the same, jobs will be given and reputations built on the merit of the work, rather than upon the price at which it is secured.—Editor.

WHAT IS SYPHONAGE?

Editor Plumber and Steamfitter.—I noticed in your "Questions Answered" page of June 15, an answer to the question "What is syphonage?" In my opinion the explanation is not explicit and is liable to mislead. The proper answer to the question would be the following:

The syphon used in plumbing is called a trap; and a trap is a vessel capable of retaining a sufficient volume of water to prevent sewer gas from coming into the house. This amount of water is called the seal of the trap. Now, the seal of a trap can be broken by syphonage.

Syphonage is the word used to express the physical phenomena that takes place when the water in the trap is pushed out of its seal by atmospheric pressure. Syphonage only occurs at the very moment that a vacuum has been caused in the stack.

I object to the expression "water pulled out of a trap" as likely to mislead plumbers. As a matter of fact, water or air cannot be pulled, but is pushed by the weight of the atmosphere, which is 14.7 lbs. per square inch.

J. E. DORE,
City Sanitary Engineer.

Montreal, June 27.

PLUMBERS' TOOLS.

Editor Plumber and Steamfitter,—We note in the last issue of your paper where McKinley & Northwood, Ottawa, are asking where they could purchase plumbers' tools. We did not notice our name attached to your reply. You doubtless know we have advertised in your paper for nearly three years all kinds of plumbers' tools. We trust the omission of our name was merely an oversight.

CANADIAN WOLVERINE CO., LTD.
Chatham, Ont., June 27.

RUNNING PIPE IN DITCH.

Editor Plumber and Steamfitter,—I have several jobs to put in where it will be necessary to do quite an amount of digging to get in the water service. Can you tell me whether or not there is some easier way of doing this in your "Questions and Answers?"

DIGGER.

Sherbrooke, June 20.

There is an apparatus called the Barrett pipe-forcing jack, made by the Duff Mfg. Co., Pittsburg, Pa., for the purpose, which has lately come onto the market. It is called a pipe-forcing jack, and with this jack it is stated that much time and annoyance can be saved and that contractors and gas companies are finding the jack of great service.—H. D. C.

SIZE OF FLOW PIPE.

Editor Plumber and Steamfitter,—Would it not be a good plan to increase the size of the outlet hole and pipe to the hot water back? Hot water takes up more room, and I think that it would help the water to move easier.

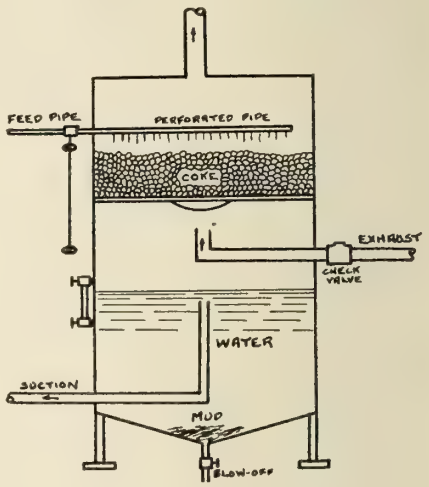
APPRENTICE.

Toronto, June 15.

It would not be necessary to so increase the size. The expansion in the general run of such instalations would be something less than one-twentieth, and it would hardly seem desirable under such circumstances to increase the size.—H. D. C.

WATER HEATER.

The accompanying sketch of a heater is an idea of my own which I am building. The idea of the coke is to clean the water or act as a strainer and the exhaust steam, entering underneath the coke, keeps the water at almost the boiling point. I am bringing the end of the suction pipe about 2 ft. up, on the inside of the heater. To allow the water to settle and the blow-



Coke Water Heater.

off at the bottom to blow off the mud, I have a check valve near heater on exhaust feed line, so water can not back up on the engine. I think I can improve it by putting on a float so that the water feed will open and close automatically.—E. Keach in The Power House.

John L. Bigley, son of Richard Bigley, heating contractor, Toronto, was married on June 29, to Miss Agnes Hohlstein.

Hints for the Customer and Craftsman

Win the Confidence of Customers by Showing Them How to Operate the Heating Plant Successfully—See that the Draft is Sufficient and the Boiler Large Enough to Make "Crowding" Unnecessary.

(Written for The Plumber and Steamfitter by C. H. Denison).

"Forewarned, forearmed," the old saying has it. This certainly applies to the heating business. For years and years we have all been trying to get the business started up earlier in the season. The spring and the summertime is the right occasion to look after the heating apparatus. The recent severe winter has tested out the heating plants.

If you know of any that were defective go after them now and see if the owner will not be prevailed upon to make the necessary repairs. Instruct those who run the boilers as to how they can save coal and get better results by using good sense, and a little labor applied at the right time. A couple of hours on a Saturday morning ought to do the work very easily; you do not need such work, why not instruct the owner?

INSTRUCT YOUR CUSTOMERS.

If you can show him (or her) where they can save from ten to twenty-five dollars per year you will sure make some good friends. Here are a few points to teach them:

1. Do not constantly adjust the drafts.
2. Have some accurate way of controlling the drafts.
3. Keep the flue surfaces of the boiler clean.
4. Be sure that there is a good and sufficient draft.
5. Put on the coal at regular intervals.
6. Only one person should run the heating apparatus.
7. Run a "banked" fire.

The seven points given all bear on the success or the failure of the heating plant. They are points of common sense and are more or less neglected or misunderstood by the average householder. Some persons are of a nervous temperament and the moment that the room or rooms become either too hot or too cold they rush to the dampers, opening or closing the same as the case may require. If the room happens to be too cold, it's ten chances to one that they will either shake down the fire or put on more coal. This, many times, is entirely unnecessary, and is a direct waste of good fuel. The proper amount to run several hours should have been put in the firepot when the apparatus was adjusted for the day (or night).

Controling the Heat.

There should be some accurate and at the same time reliable means of controlling the amount of heat to be delivered to the rooms. On the steam and hot water boilers this has been done by the automatic damper, which, when properly adjusted, generally closes the draft damper on the turn of half a pound's pressure or less. Suppose, however, that you have a flat of three storeys. The first floor tenant, the second and the third floor tenants may each require a different temperature in their rooms.

There are heat controllers in the market so accurately adjusted that merely a few degrees' change in the temperature of the room causes them to perform their office automatically. The power to run these regulators is obtained in some cases by means of expansion and contraction of the metals, and in others by vaporizing some liquid or by clock worked by electricity.

While keeping the flue surfaces of the boiler clean, attention should also be given to the water. This applies to both steam and hot water heating apparatus. In the hot water plant the water should be changed at least four times each year. The ash pit should be kept entirely clean, the flues thoroughly brushed out twice a month, and the condition of the smoke pipe examined. Change water frequently in the steam boiler.

Is Draft Sufficient?

In regard to the draft, no boiler will give satisfactory results if the draft is not sufficient, such a condition results in a constant poking of the fire to keep up the heat, and this means the burning of more fuel. A banked fire (using pea coal, ashes, or coal dust) will hold the heat for several hours, when by using the coal in the ordinary manner the fire will be burned out long before the full benefit of the coal could be attained. I said "could be," and not had been. The heat was there all right, but it went up the chimney, instead of being held in the boiler. This scheme of banking the fire will save from one to three tons of coal each season. Do not run a shallow fire, and be sure to put the fuel on at regular intervals. About twice in each twenty-four hours should be sufficient if the job is put together correctly. Three times at the most. A plant in a house that cannot carry steam, or the heat, as in the case of hot water, for eight hours without being constantly fired is not much good, no matter who has put it in.

Whenever the arrangements of the family will admit of it, only one person should attend to the running of the fire. Ideas are apt to conflict, and when everybody tries to manage the fire the result is a cold house generally, no matter how good the plant may be. Right here is where another ton or two of coal may be saved by careful attention.

Boiler Should be Large.

The foregoing points attended to there should not be any difficulty in heating the house in good shape, provided the job is properly put in. A person makes a great mistake in buying a boiler just large enough to do the business. There should be a "leeway" of at least one-third in the boiler, to avoid the constant firing necessary to get any results at all as is the case when the plant must be "crowded" when the severe weather holds sway.

The boiler should be located as near to the chimney as is possible. This will give a better draft and also less smoke pipe to buy when it needs to be replaced. Avoid placing the boiler in a pit. It makes extra steps and also cuts down the draft. It is again very inconvenient to clean out the ash pit in such a case. Should the water ever get into the cellar in the early spring or late fall it gets into the pit and puts out the fire, causing much inconvenience. If the mains are not properly covered here is a chance to save another two or three tons of fuel each year and at the same time keep the cellar from becoming too hot. See that the boiler is covered properly and sufficiently, for here is another point where coal can be saved. Get after the people in the summertime, for the job can be done better when you can take your time to it.

OTTAWA WAGE AGREEMENT.

Editor Plumber and Steamfitter,—The Ottawa Master and Journeymen Plumbers are surely deserving to be complimented in the business-like way they have come to terms on agreement presented by Journeymen Association last April, since they have met, represented by a committee of three members of both association, and sifted the demand of the men in a most friendly way for the best interest of the trade. They have come to a compromise for the next eighteen months, establishing the minimum wage per hour at 39c for 9 hours a day and half holiday on Saturday for six months, and 8 hours and half holiday for next six months of year. This is surely the way to protect the trade and not smash it to pieces. Montrealers please read this and think it over.

EX-MONTREALER.

Ottawa, June 30.

Gossip of the Plumbing and Heating Trade

Items Gathered in all Parts of Canada—Letters Invited From Subscribers, Giving Particulars Regarding Changes in Firm Names, Contracts Secured, Novel Methods of Advertising or Other News—Photos of Anyone or Anything Connected With the Trade Also Welcomed.

Fittings Limited, are making extensions to their buildings at Oshawa.

Andrew H. Farrell, plumber, Fredericton, was married in St. John, on June 18 to Miss Catherine Stevens.

Wm. Knell & Co., formerly in the plumbing business on Queen Street, Berlin, are opening a hardware store there.

A small fire last week damaged the premises of Buller & Wooster, plumbers, London. The loss is fully covered by insurance.

The Alberta Heating and Plumbing Co., of Winnipeg and Calgary, are opening a branch at Lethbridge, Alta. P. Smith is the local manager.

Robert Berbeck, tinsmith, dropped dead while working in his house at Thorold, on the night of June 15. The cause of seath was heart disease.

The travelers for the Western Ontario heating and plumbing supply houses purpose holding their annual picnic at London on Saturday, July 16.

A. Wheatley, traveling salesman for the Monarch Brass Mfg. Co., Toronto, is in temporary charge of the Victoria Street (Toronto) warerooms of the company.

The employes of The Jas. Morrison Brass Mfg. Co., Toronto, will hold their 22nd annual excursion and games on Saturday, July 9, to Queen Victoria Park, Niagara Falls.

John Bing, representing Bing Brothers, manufacturers of bathroom and plumbing supplies, Nuremberg, Germany, is visiting Canada at present in the interests of his firm.

J. R. Myers, of Stratford, has secured the contract for the plumbing and heating work for the new Bell Telephone office now in course of erection, also for the new Masonic Temple at Stratford.

Darling Bros., Montreal and Toronto, have installed two Burnham pumps in the power plant of the Robt. Simpson Co., Toronto, in connection with the heating system for the large departmental store.

The St. Mary's Hardware Company report that their plumbing trade has opened earlier this season than in former years, they have a full staff of men on and their business for the coming season looks bright.

J. Laughlin, secretary of the Robertson-Godson Co., Vancouver, plumbing supplies, metals, etc., spent a few days in Toronto last week renewing acquaintances with his old co-workers at the James Robertson Co.'s works.

The Universal Metals and Aluminum Solder Co., is the name of a new company formed at Quebec City, to manufacture and deal in solder and all metals including aluminum. The incorporators are H. Dussault and J. E. Dussault, of Levis, and O. Turgeon, Quebec. The capital of the company is $100,000.

Plumbers and steamfitters in New Westminster obtained an increase of twelve and one-half cents per hour, namely from $22 to $27.50 per week of forty-four hours. Bricklayers, stone masons and plumbers at Vancouver received increases in schedule, the latter being advanced from a minimum of $4 to one of $5 a day.—Labor Gazette.

John M. Collins, of the Standard Sanitary Mfg. Co., Montreal, sailed for England a few days ago on the S.S. Victorian with Hon. Chas. Doherty, K.C., and Henry J. Trihey, K.C., counsel for the Standard Sanitary Mfg. Co., in the appeal of the Standard Ideal Co., Port Hope to the Privy Council, which appeal comes up for hearing in July.

Quite a number of Toronto plumbers were present at the marriage ceremony of John J. McCandlish, plumber, to Miss C. Mooney on June 28. James McKittrick, secretary of the Toronto Furnace and Crematory Co., was a guest, as was also Jas. Costello, of the King Radiator Co., who sang during the service. Frank Morrison of the James Morrison Brass Mfg. Co., was among those present in the church.

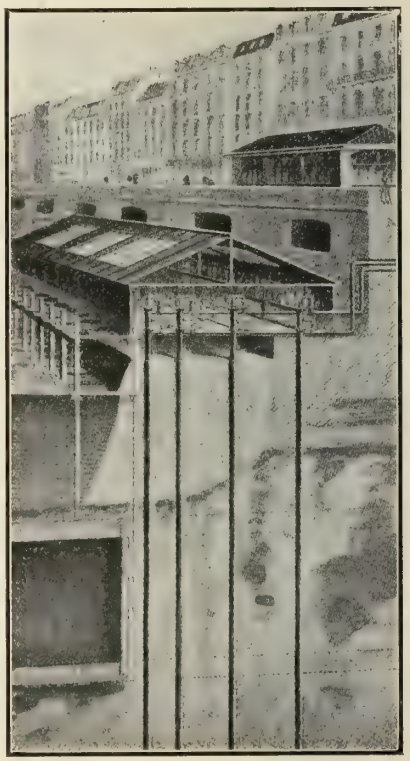
FREEZING EARTH IN TUNNELING.

Freezing the soil under a river to make it solid enough for railway tubes to be built through it was the remarkable means utilized by the engineers of the Paris metropolitan railways in running the line under the Seine river. This section, 5,500 ft. long, passes under two arms of the river, under the city barracks, and under two working railway lines. It includes two stations which are situated below the level of the water. The junction of the caissons in the middle of the Seine, therefore, necessitated the use of a special process.

The ground which was frozen consisted of mud, sand, marl and limestone, and a large part of it was under the bed of the river. The freezing of such a mass of earth necessitated the installation of a powerful plant. A double pipe service carried the refrigerating liquid into a coil of boring pipes sunk into the earth, where it circulated and froze the soil adjoining the pipes by radiation, and then returned to the plant.

Each tube had a radius of action of about 4 ft., and froze the soil by degrees, until it became compact and dry. On the conduits and pipes in the open air the coating of ice attained a considerable thickness, thus forming an excellent insulator for the tubing.

About three months after the beginning of the freezing a sudden inundation of the works caused the engineers much uneasiness, but it only proved the wonderful success of the system. A stream of water, passing under the upper part of the quay and across the foundations of the Orleans station, passed around the frozen mass, burst into the subterranean part which was being pierced,



System of Soil Refrigeration.

and completely filled it. A cofferdam, about 200 ft. long, had to be constructed along the whole length of quay to cut off the water. During the four days required in draining the underground it was feared that the water would have thawed the frozen mass, but it was discovered that the water had frozen into a solid wall of ice.—Popular Mechanics.

Tales of the Trade

CHANGE OF TRAVELERS.

W. H. Cunningham has resigned his position with The James Robertson Co., Toronto, and is now representing

W. H. CUNNINGHAM.

Who Will Represent the Ideal Mfg. Co. in Western Ontario in Future.

The Ideal Mfg. Co., Detroit and Windsor. Mr. Cunningham was with the Robertson Co. for eight years, four of which were spent in the office, and the past four years as traveling salesman in the Niagara peninsula. His new territory will cover Western Ontario between Toronto and Windsor and as far north as Owen Sound. He is succeeding L. K. Markey, who has been transferred to the Western field. Mr. Cunningham's place with Robertson's will not be filled at present, but temporary arrangements have been made whereby Richard Crashley, Toronto city traveler, will take on Hamilton in addition to his own work, and Lou Martin, will look after the rest of the territory.

SALESMAN CHANGES JOB.

James Glennister, for many years with the Dominion Radiator Co., and for the past couple of years residing in London with Western Ontario as his field of operations, has resigned and accepted a position with the Canadian Wolverine Co., Chatham, with Montreal as his headquarters. Jimmy is a very likeable fellow and very popular with the trade so he ought to make good in selling Wolverine goods.

The unsatisfactory condition of the heating business is given as the reason for the jump from selling radiation to disposing of brass goods and plumbing supplies.

SAM HADLEY'S SMILE.

One of the jolliest plumbing supply salesmen covering Western Ontario is S. T. Hadley, of the James Morrison Brass Mfg. Co., Toronto. He always wears a smile on his face and has a funny story to tell, sometimes about his famous bull pup and its doings, and very occasionally about his duck shooting expedition last fall when he paid out some good money rather than return without a bag.

Hadley is quite a ladies' man in his own way, in fact our photo shows him posing for a St. Thomas girl in front of E. B. Dixon's plumbing shop in that city. He had a few good orders in his pocket, but it's an even bet that the lady had more to do with the smile than the orders.

One of Mr. Hadley's friends gives the following account of a conversation he heard one day when he was having dinner at the Grand Central with Hadley. A new waitress, and a pretty one at that, came to attend to their wants and Hadley opened up with:

"Nice day, little one."

"Yes, it is," she answered, "and was yesterday, and my name is Ella, and I know I'm a little peach, and have pretty blue eyes, and I've been here a week and like the place, and I don't think I'm too nice a girl to be working in a hotel; if I did I'd quit my job; and my wages are satisfactory; and I don't know if there is a show or dance in town to-night, and if there is I shall not go with you, and I'm from the country, and I'm a respectable girl, and my brother is cook in this hotel, and he weighs 190 pounds, and last week he wiped up this dining room floor with a [illegible] commercial traveling man who tried to make a date with me. Now, what'll you have?"

The flow of eloquence dazed Hadley, but he stammered out a request for a glass of water and then forgot to drink it when it arrived.

S. T. HADLEY, Toronto,

Looking His Prettiest for a Handsome Girl Kodaker.

SHOWER BATHS FOR CHILDREN.

E. T. Melms, the socialist president of the Milwaukee city council, is investigating a street shower bath system which he plans to have placed in service in Milwaukee. Shower bath sprays are attached to the fire hydrants along the streets and during the hot summer weather the children are allowed to play under them, with old clothes on.

CREDIT GIVEN TO PLUMBERS.

Chicago, laboring under the most serious disadvantages at the outset from a sanitary point of view, has obtained the proud record of being the healthiest city among all large cities in the United States. The typhoid death-rate for the first six months for 1910 was only 8.3 per 100,000 inhabitants. This remarkable health-record is due to the work of plumbers.—Dr. W. A. Evans, Commissioner of Health, Chicago, at the Chicago convention of the National Master Plumbers' Association.

Recent building permits at Toronto include the Empress Hotel addition, $125,000; a $20,000 building for H. Bowen, and one for $10,500 for E. M. Trowell.

The Bank of Nova Scotia have completed arrangements with Mackenzie & Mann, whereby a new building will be erected at Port Arthur. The estimated cost being $40,000.

Extensive new building improvements, such as a new high school, a new Y. M. C. A. and a hospital are nearing completion at Oshawa. Besides these, over one hundred houses are in the course of erection.

Recent building permits issued at Outremont, Que., include Donald Munro cottages, $32,000; Rider Jones, cottages, $32,000; M. Drouin, flats, $10,000; Dalgarnier Syndicate, cottages, $8,000; A. E. Gascoin, residence, $7,200; G. H. Landridge, residence, $5,500.

New Buildings, Water and Sewerage Systems

Opportunities Offered by Municipalities and Private Enterprise for New Plumbing, Heating, Ventilating or Sanitary Systems—Work Being Undertaken in Every Section of the Dominion.

Municipal Undertakings.

Ratepayers of Fairville, N.B., will vote on a sewerage system.

J. J. Wood was awarded the contract for the construction of storm sewers at Fernie, B.C.

Ladysmith, B.C., council have passed a by-law to raise $25,000 to improve its waterworks system.

Montreal's city surveyor contemplates an extension of the waterworks system on Queslin Street.

The by-law to spend $4,000 on preliminary work for waterworks at Tofield, Man., was carried.

The town council of Oakville have authorized T. A. Murray to prepare plans for sewerage disposal works.

S. P. McKord & Co., Victoria, have received a $15,916 sewer construction contract at Prince Rupert.

The contract for supplying ten joints for water pipes at Ottawa has been awarded to Gordon Law, at $1,650.

The Brouse-Mitchell Co., Vancouver, have secured the contract for the construction of waterworks in Burnaby, B. C.

A by-law to authorize the expenditure of $70,000 for drainage system will be submitted to the Chilliwack, B.C., ratepayers shortly.

Carriere & Wilson have been awarded the contract for the construction of the new sewer on Champlain Ave., Hull, Que., for $2,850.

Tenders addressed to H. J. Knoll, reeve of Humberstone, Ont., will be received until July 31 for the work known as Lyons Creek Drain.

The Structural Steel Co., Montreal, have been awarded the contract for the construction of an 80,000-gallon stand pipe for the municipality of Longueuil

Evans, Coleman & Evans were awarded the contract for supplying the First Narrows main pipe, by the Vancouver water committee at a figure of $4,120.

Tenders addressed to G. W. Bilbrough, secretary-treasurer, Swift Current, Sask., will be received until July 12 for the supply of hydrants, valves, and cast iron water mains.

Tenders addressed to W. F. Heal, city clerk, Moose Jaw, will be received until July 18 for supplying material for and constructing sewage disposal plant, complete, and laying trunk sewer.

The City of Victoria's purchasing agent is calling for tenders for 10,000 feet of 1-inch galvanized iron pipe, 500 feet of 1½-inch galvanized pipe, and 500 feet 2-inch galvanized pipe.

The waterworks branch of the Civic Works Department, Vancouver, is this year laying 100,000 feet of 6-inch pipe, 45,000 feet of 12-inch, 20,000 feet of 20-inch and 18,000 feet of 16-inch.

Toronto will extend its water mains and provide additional hydrants for improving the fire protection in the vicinity of the Parliament buildings. The cost, $7,000, will be paid by the province.

Tenders will be received at New Westminster, B.C., for the laying of about 14 miles of 25-inch riveted steel water mains and about 7,780 feet of 12-inch and 7,500 feet of 13-inch lap-welded pipe.

A by-law is being submitted to Port Arthur ratepayers to cover an expenditure of $500,000 in extending the waterworks system, and also a by-law for $10,000 for the extension of the electric lighting system.

The Montreal board of contral have awarded contracts for a 4,000-ton supply of cast iron pipe, lowest tender being accepted in each case: Beverley Robinson, representing Stanton Iron Works Co., Nottingham, Eng., 4-inch pipe, $29.50, 12-inch pipe, $27.50; Robert McLaren & Co., Glasgow, represented by L. H. Gaudry & Co., Quebec and Montreal, 6-inch pipe $29, 8-inch pipe $27.90, 10-inch pipe $27.70, 16-inch pipe $27.35, 20-inch pipe $27; Canada Iron Corporation Co., Three Rivers, Que., 24-inch pipe $27, 30-inch pipe $27.50.

Public Buildings.

A new public school will be built at Dresden, Ont.

The C. P. R. will erect a station at Headingly, Man.

A new city hall and jail will be built at Chilliwack, B.C.

The Gretna, Man., ratepayers carried a $12,000 school by-law.

The $179,000 schools by-law was carried at South Vancouver.

Tenders for erection of town hall at Hanover will be called shortly.

A new Presbyterian theological college will be established at Edmonton.

A 6-room school costing $20,000 will be erected at Elkhorn, Man.

The $12,000 by-law for school buildings, was carried at Dauphin, Man.

Victoria ratepayers will consider the expenditure of $13,000 on schools shortly.

The Woodstock ratepayers will be asked to vote on an $85,000 city hall by-law.

Plans are now being prepared for a new Lutheran church at New Hamburg, Ont.

The plan of Hope & Barker was accepted for the new school at North Vancouver.

Plans are being prepared for a public library at Hanover on which $10,000 will be spent.

Tenders are invited for the completion of a city hall at Calgary. Estimated cost $126,000.

It has been decided to build a $20,000 addition to St. Joseph's Hospital, Hamilton.

Dufferin Ave. Presbyterians, Winnipeg, are contemplating the erection of a new edifice.

Dartmouth, N.S., ratepayers will vote on the amount of $4,500 for the new school on July 2.

Over $10,000 has been subscribed for the erection of the new Chalmers church at Woodstock.

The congregation of the Church of Christ, Winnipeg, willl erect a new edifice, to cost $14,000.

A new Horticultural building will be erected for the Dominion Exhibition to be held at St. John, N.B.

The contract for the additions to the Arnprior High School has been awarded to S. R. Rudd at $12,907.

A by-law will be submitted to the Chilliwack, B.C., ratepayers shortly for the erection of city hall.

A new dairy building for the Central Canada Exhibition at Ottawa, will be erected at a cost of $6,000.

Tenders will be called shortly for erection of an addition to General Hospital and Nurses' Home, Owen Sound.

Plans for the new post office at Chilliwack, B.C., have been prepared and site secured. Estimated cost, $30,000.

George McLaughlin has offered the town of Oshawa a free site for the proposed new public school building.

J. B. Morrisson, Winnipeg, has been awarded the contract for the new school house at Headingly, Man., to cost $5,700.

J. & J. Large, of Listowel, were awarded the contract for building a brick edifice for the Methodist church, Cayuga, Ont.

The contract for St. Catharines General and Marine Hospital was awarded to Newman Bros, of that city for $46,000.

Plans for the new government court house and police station at Stewart, B.C., have been received by the Government.

The contract for the building of the school for the Knoxville school district, near Estevan, Sask., was awarded to J. H. Wilson.

The contract for the erection of the new Carnegie Library building at Orillia, has been awarded to Joseph Langman, at $11,715.

Weeks & Keefer, Ottawa, have been appointed architects for the new Cumberland Street fire station, that city, to cost $15,000.

The contract for the new hospital building at Edmonton has been awarded to the Connell-Spencer Contruction Co. at $170,000.

Plans have been approved for the Municipal Hall to be erected at Winnipeg on the site given by F. Ness.

The contract for the new hospital building at Edmonton, has been awarded to the Connell-Spencer Construction Co. at $170,000.

The contract for the erection of a hall building for the Canadian Amusement Co., Montreal, has been awarded to the J. Jacobs Co.

The Toronto Board of Education will erect an addition to the Coleman Ave. school, also an addition to the collegiate on Malvern Ave.

A new Roman Catholic college will be erected at Chatham, N.B. It is being built under the direction of the Basilian Fathers, of Toronto.

The site for the high school at Victoria, has been selected at Spring Ridge, and $30,000 has been contributed towards its erection.

The contract for building addition to and making alterations in high school at Arnprior, Ont., has been awarded to S. R. Rudd, at $12,907.

Leonard Kenwrick, Winnipeg, is the architect for the new St. John's Anglican Cathedral. The nave will be erected first at a cost of $75,000.

J. D. McLean, secretary, Department Indian Affairs, Ottawa, will receive tenders until June 25 for the erection of a school house, to be built at the Oneida Indian Reserve, in Ontario.

Newmarket ratepayers carried a by-law to spend $15,000 in enlarging the high school. The board will ask for tenders at once and will proceed with the enlargement this summer.

The plans and designs of three new schools for South Vancouver submitted by J. H. Bowman, architect, were accepted. The cost of the three new schools totals about $120,000.

The Grey Nuns have purchased the property, southwest corner Sherbrooke and St. Lawrence Boulevard, Montreal, for $135,000 from the Molson Estate, and this will be converted into a hospital building.

The Winnipeg voters defeated the by-law to grant $400,000 to the general hospital, but carried a vote of $100,000 towards a tuberculosis hospital and $75,000 towards a hospital for infectious diseases.

The contract for the addition to the Ryerson school, Brantford, was awarded to J. Faulkener, of that city, and that for King Edward school to P. H. Secord & Sons. Plans, etc., are being prepared for heating and plumbing.

The Niagara Falls city council decided to submit three by-laws to raise money; one for $15,000 to build a new assembly hall, gymnasium and collegiate; another for $2,000 to repair the heating at the collegate, and the third to raise $2,500 to build a new fire hall.

The board of directors of the Children's Hospital, Winnipeg, have purchased the old Ladies' College site on which they will erect shortly a new hospital. Cost of site and proposed building, about $80,000.

The contracts for the improvements to the St. Thomas School at Hull, Que., have been awarded to A. Archambault and Caron Pepin. The former will install the heating apparatus for the sum of $900, whilst the latter will put in ventilators throughout the building and erect a fire escape for the sum of $2,300.

The contracts for the central wing of the Toronto Western Hospital have been awarded by the Board of Governors. The Hamilton Bridge Co. will supply the steel work; Douglass Bros., the galvanized iron work, and A. M. Brown, the painting and glazing. The steam heating and plumbing has not yet been let. Cost of wing, $50,000. Total proposed cost, $500,000.

General Buildings.

D. Blay is erecting a flat at Montreal, cost $12,000.

A. Viens is erecting a flat at Montreal to cost, $10,000.

Beveridge Bros will build a business block at Calgary.

J. Johnson will build $40,000 apartment house at Winnipeg.

Dingle Bros, Winnipeg, will build a warehouse to cost $25,000

A $125,000 addition will be made to the Empress Hotel, Victoria.

T. C. Watkins, Ltd., will erect a warehouse and stables at Hamilton.

H. O. Lee will build a large business block at Vancouver, to cost $100,000.

Pryce, Jones, Canada, Ltd., will erect a building at Calgary, to cost $50,000.

G. A. Walton will erect apartments on Hazelton Avenue Toronto, to cost $22,500.

The Dominion Bank of Canada, will build a new branch building at Saskatoon.

The Mason & Risch Piano Co. will build a six-storey building on Yonge St., Toronto.

The Petrie Manufacturing Co. will build a warehouse at Winnipeg, to cost $22,000.

The Masons of Nanaimo, B.C., will build a new lodge building to cost $30,000.

A. W. Frodsham & Co. will complete their block at Fort William. The addition will cost $15,000.

A permit was issued to E. M. Rinehart for an apartment house at Vancouver to cost, $12,000.

Plans and specifications are being prepared for the erection of three flats, for A. Duramleau, Montreal.

The Gallagher, Holman & La France meat market will erect a building at Winnipeg, to cost $20,000.

The Campbell, Wilson Co., Winnipeg, will build a block at Saskatoon. Estimated expenditure, $40,000.

Tenders are being received for the erection of a flat for R. Deschesne, Montreal. Cost of permit $12,000.

The C. N. R. will erect an hotel at Winnipeg.

F. C. Ball & Co., Winnipeg, will build a large three storey brick warehouse at Saskatoon, to cost $20,000.

Fremlin & Co. have a permit for a $25,000 4-storey warehouse to be erected at Vancouver.

Mayor Hopewell, Ottawa, has taken out a building permit for a $10,000 brick apartment house.

J. E. Wilson will build two apartment blocks at Winnipeg to cost, $100,000.

A four storey addition is to be made to the Michaels' Block for the Regina Trading Co., Saskatoon.

Plans are being prepared for the office building of the Page-Hersey Tube Works, Welland.

Green & Co., millinery importers, will erect a business block at Winnipeg to cost, $40,000.

Plans for the Gordon Mitchell Drug Company's new building at Winnipeg have been prepared.

J. J. Vopin is the contractor for the 3-storey building for the Logberg Printing Co., Winnipeg.

F. Ashford will build a three-storey annex to his apartment block at Winnipeg to cost $19,000.

Architect Bellhouse has completed plans for a $25,000 addition to the Ashford block at Winnipeg.

A permit has been awarded Mr. Fellows for the erection of three cottages at Outremont, Que., to cost $15,000.

Sidney Smart secured the contract for the Bank of Hamilton's new brick building at Melford, Sask, to cost $11,750.

A building permit was issued for extensive alterations to basement of Thomson Bros.' block, Vancouver, $35,000.

A permit has been issued to the Union Realty Co., Brantford, for the erection of a block of brick buildings, to cost $17,600.

Russell Bros. have the contract for the erection of a warehouse to be erected for Symes & Co., Fort William, to cost $17,000.

Peter Lyall & Sons have been awarded the contract to erect on the Seminary of St. Sulpice property, Montreal, a ten-storey office building to be, it is said, the largest in Canada and to cost, $1,000,000.

Recent building permits issued at Toronto include: Wilkins & Co., 6 dwellings, $30,000; S. F. Harvey & Co., factory, $18,000; E. G. Switzer, 3 dwellings, $18,000; Wm. Robinson, 5 pair semi-detached dwellings, $20,000; G. Griffin, apartments, $12,000.

The Massey-Harris Co., Toronto, propose building a club house, etc., for their employees near their factory. Estimated cost, $100,000.

Chappell Bros. & Co., Sydney, N.S., have the contract for fifty-six cottages for the Dominion Coal Co., at New Waterford, N.S.

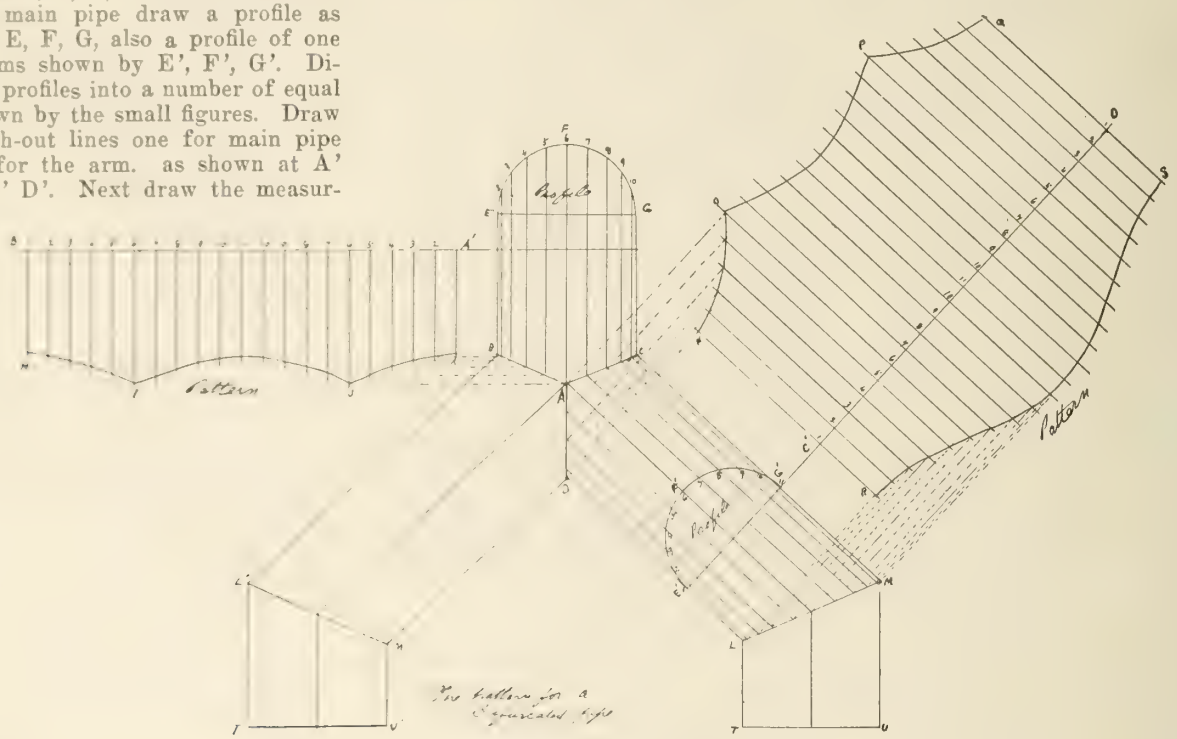
Cutting Patterns in the Tin Shop

Readers of Plumber and Steamfitter are Requested to Make Use of This Department—Questions Regarding Patterns Will be Answered by Experts—Discussion is Also Invited on Any Matter Pertaining to the Tin Shop.

BIFURCATED PIPE PATTERN.

First it is necessary to make a correct drawing of the intersection of the parts showing the mitre lines, and next divide the arms and main pipes into two equal parts. With lines drawn through the centre, the correct mitre lines will be shown. Thus the intersection of the three lines at A gives the point at which the mitre lines start. The points B, C, D, must meet. In line with the main pipe draw a profile as shown at E, F, G, also a profile of one of the arms shown by E', F', G'. Divide both profiles into a number of equal parts shown by the small figures. Draw the stretch-out lines one for main pipe and one for the arm. as shown at A' B' and C' D'. Next draw the measuring lines. Draw lines from the points in profile E, F, G, to meet mitre lines at B, A, C. Then with the T square at right angle to G, C, carry points of mitre line C, A, B, into measuring lines of corresponding numbers. A line traced through these points as shown at H, I, J, K, will give the mitre cut for main pipe. Next draw lines through the profile E', F', G', to meet the mitre lines at D, A, C, and L, M, and with the square at right angles to L, D, drop points in mitre lines L, M, and D, A, C, to corresponding numbers in measuring lines as shown at N, O, P, Q, which will be top of arm and R, S, the cut for bottom of arm. The cut R, S, is the same as an angle elbow and can be used to finish the pipe shown at L, M, T, U.

W. J. R.



NEW FORM OF ROOFING.

Floyd Moffett of Forest, Ohio, has patented a roofing which comprises a rectangular sheet having one of its longitudinal edges bent upwardly and inwardly to provide an upstanding right angular flange having a vertical portion and an inturned horizontal portion. A second rectangular sheet has one of its longitudinal edges bent to provide an upstanding angular flange having a vertical portion. An outwardly projecting horizontal portion and an edge portion are folded under the outwardly projecting horizontal portion, the inwardly projecting horizontal portion of the flange on the first sheet being adapted to enter beneath the outwardly projecting horizontal portion and the edge portion on the second sheet. The engaged horizontal portions of the two sheets are adapted to be bent downwardly. A locking and attaching strip has a horizontal end disposed beneath the first sheet, the angular upstanding portion to engage the outer faces of the vertical and horizontal portions of the angular flange on the first sheet. There is a double fold to receive the edge portion of the flange on the second sheet and adapted to be bent downwardly with the horizontal portions of the flanges of the two sheets, the strip also having a free end extending vertically and engaged with the outer face of the upright angular portion of the flange on the second sheet, the free end being bent over the flange and downwardly in a direction opposite to the folding of the flanges of the two sheets.

PRICE CUTTING.

To cut or not to cut, that is the question.
Whether 'tis not better in the end
To let the chap who knows not the worth
Have the work at cut-throat price, or
To take up arms against his competition
And by opposing cut for cut end it.
To cut—and by cutting put the other cutter
Out of business—'tis a consummation
Devoutly to be wished. To cut and cut
Perchance thyself to get cut too.
Ay, there's the rub, for when one starts
To meet the other fellow's price, 'tis like as not
We'll find we are up against a wall of brick,
And that cut and cut will not end the confusion
Or one of the many evils the trade is pestered with.
Nay, nay, don't cut; 'tis but the forerunner
Of debt and mortgage and all such ills.
'Tis well to get the price the work is worth
And not be bullied into selling
For what so and so is fool enough to take.
Price cutting is positively unseemly,
And fit only for the man who knows not
What his work is worth, and who 'ere long
By very stress of lean profits which make
'Twixt bank account and liabilities
A gap so wide that through it
He makes his exit from the business.

(With apologies to William S.)

The smaller the town the more frequently window displays should be changed.

The main scheme of a window display should be carefully thought out before any work is put into it.

PLUMBING AND HEATING MARKETS

MONTREAL.

June 30.—The good movement in all lines continues, and with the prospect of very heavy business later on, there is naturally a very bright tone to the markets generally. The heavy demand noticed for so long in soil pipe shows no sign of letting up. Manufacturers of enamelware report very fine business, and stocks in jobbers' hands are on the light side. Boilers and radiators are moving well for immediate delivery, and although prices are being cut by one maker, discounts generally are firmly held.

Plumbers report work as being plentiful, and with the building planned out ahead plenty of jobs should be coming their way. Prices are unchanged, although concessions which have been made on iron pipe are now withdrawn.

Soil Pipe—Owing to the very heavy demand that has so long been experienced, soil pipe is none too plentiful, and makers are working at full pressure to supply the call. Heavy orders are going out in all directions, and we quote light, 60 off; heavy, 70 and 10.

Lead Pipe—A strong active demand is noticed for lead pipe. Supplies are in good shape, and rush orders are promptly met. We quote pipe and waste at 30 off; traps and bends, 50; calking lead, 5c per lb.

Solder—Heavier lots of solder have been sold within the last few days. Roofers are busy, while it is evident that more buying ahead is being done. Prices are unchanged, and we quote half-and-half 20c, wiping 18½c.

Iron Pipe—The market is firmer. Concessions which were made for good round lots have been withdrawn, and further advances are not unlikely. Business is good, and we quote: ¼-in. black, 63; galvanized, 48; ⅜-in. black, 59; galvanized, 44; ½-in. black, 69; galvanized, 59; ⅜ to 4-in. black, 71½; galvanized, 61½.

Radiators and Boilers — Although prices have been slashed in a certain quarter, the rest of the trade are holding firmly to agreed-upon figures. Radiators and boilers are moving out well for immediate delivery, and the general condition of trade is very good. We quote: Steam boilers, 60 and 5; hot water boilers, 50 and 10; wall and hot water radiators, 50 and 7½; steam radiators, 50 and 7½ per cent.

Scrap Metal—Scrap prices are unchanged, with more metal offering than for some time past. We quote: Heavy copper wire, 11½c; light copper bottoms, 10c; heavy red brass, 10c; heavy yellow brass, 8c; light brass, 6¼c; tea lead, 2½c; heavy lead, 2¾c; scrap zinc, 3c; cast iron, $16.

Metals—Copper has developed weakness, and prices are sagging. The other lines are unchanged. We quote: Tin, 35c; copper, 13¾c; imported lead, $3.75; domestic lead, $3.60.

TORONTO.

June 30.—Enamelware and brass goods are the leaders in plumbing supplies that are at present moving. Heating goods, too, are very satisfactory, with inquiries and sales increasing all the time.

There are no price changes to report. The market is strong and the situation has a firm tendency.

June has been a good month, and the past ten days were decidedly active. With the coming of July there is expected to be a second call for roughing-in materials. This should keep the supply houses steadily busy all through the summer, as there has usually been in the past a somewhat easing off in demand for finishing material during July.

Enamelware—Sales during the whole of this month have been very good, and when comparisons are struck it will be found that June, 1910, will be about the best similar month for business in a decade. Sink and laundry tubs are moving splendidly just now. Opinion has been expressed that July may ease off some in demand for enamelware, but by September and thereafter until the end of the year preparations are being made for big calls for all kinds of enamelware. Prices are unchanged and very firm.

Soil Pipe—The revival in demand for soil pipe did not last long. For the past ten days sales have not been up to the standard set during the spring months. July should see more of this line moving, however, together with other roughing-in materials, for, locally, there are a great number of contracts awaiting closing on permits which have not as yet been exercised. Prices are unchanged. Light pipe is 60 and 10 off; medium and heavy, 70 and 10; and 7 and 8-inch pipe, 50 p.c. Fittings remain at 70 and 10 off.

Iron Pipe and Fittings—Small sizes of pipe are in great demand, present-day sales are taking up large quantities. Stocks are fairly heavy in manufacturers' hands, but supply houses and jobbers state they cannot keep any large amount in their stock-rooms. The market is firm at unchanged prices. Discounts on malleable fittings range from 37½ to 40 p.c., with cast iron fittings from 60 to 65 off. Bushings, standard, are 70, and malleable are 65 p.c. Nipples are 75 and 10; headers, 60, and flanged and malleable-lipped unions, 65 p.c. Galvanized pipe is $6.35 and black pipe $4.70 per hundred feet, 1-inch size.

Lead Pipe—The higher quotation of 30 off has helped the situation and sales of lead pipe are just now pretty fair. Traps and bends are selling well. They are still at 50 off. Calking lead is around 4½c to 4¾c a pound.

Solder—Sales are very good and orders are heavy. Half-and-half ranges from 18½c to 20c a pound, with wiping from 17c to 19c. These prices are firm.

Brass Goods—High-grade compression is at 60 p.c., and medium 65. Fuller work is 70 off. The market is firmer, especially on compression work. Manufacturers report steady and brisk business.

Boilers and Radiators—The cut price bogey is being stilled. All heating engineers report splendid business and heavy demand. Hot water boilers and radiators are 50 and 10 off, with steam radiators 2½ p.c. better.

Metals—All metals, new and old, are easy. Tin is 35c; copper, 13¾c; lead, $3.75 (imp.) and $3.80 (dom.). Old metals—Lead, 2½c; zinc, 3½c; copper, 10c (about); iron, ½c.

JOURNEYMEN TAKE COMMENDABLE STAND.

F. Avery, A. Calcott and H. Aked, a committee from the Plumbers' and Steamfitters' Union, London, Ont., recently called the attention of a committee of the London City Council to the deplorable condition of plumbing work being done in that city as frequently referred to in The Plumber and Steamfitter.

Mr. Aked told the committee that it was high time something was done to ensure better plumbing work. He believed that the office of plumbing inspector could be created and made self-sustaining by levying a license fee of $25 on the 30 master plumbers in this city, and a fee for about $5 on journeymen plumbers. Additional money could be raised by compelling all persons building additions or making improvements to take out a permit, the cost of which could be fixed at $1. There should be an examining board of plumbers, elected to pass upon the eligibility of persons applying for licenses. Mr. Aked had thought the matter over pretty carefully, and the way he figured it out the city would derive a revenue of $1,200 by creating the office of building inspector.

The baseball game arranged between the Toronto master plumbers and the travelers from the supply houses postponed from June 25, will take place at Dufferin Driving Park, Toronto, on July 9th.

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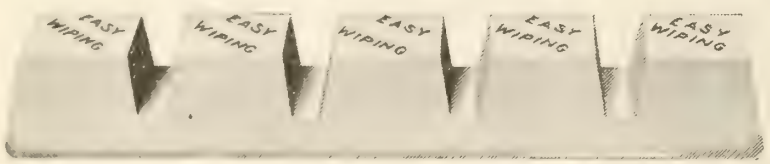

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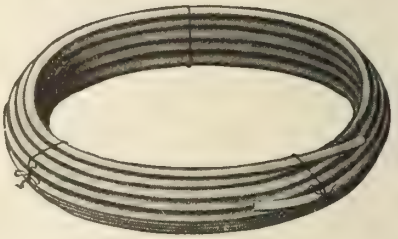

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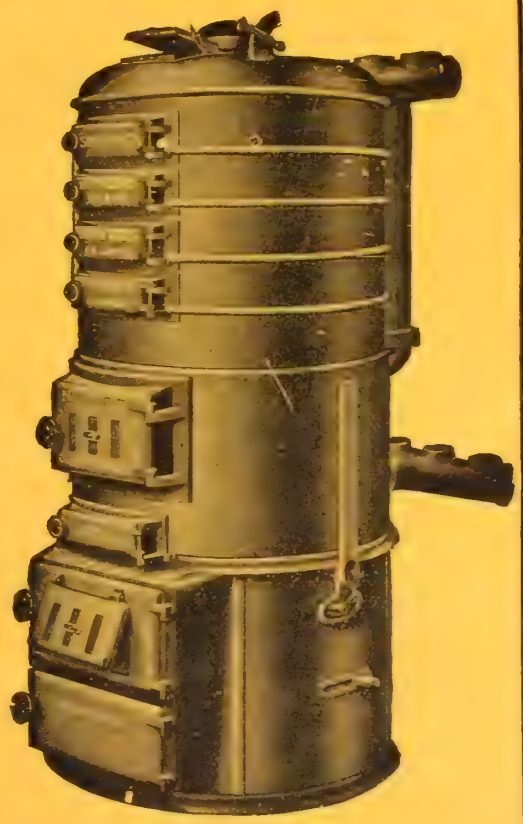

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Plate F
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Vol. IV, No. 6 (New Series). Publication Office : TORONTO, JULY 15, 1910. Old Series, Vol. XXII. No. 14

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Which one of these three classes has the most influence in selecting the make of boilers, radiators, soil pipe, brass goods, enamelled ware and other goods installed by plumbers and fitters in any new houses which are being built?

A prominent steamfitter in Canada stated recently that two years ago he had handled one make of boilers and installed them during 1908, to the exclusion of all other lines. He had some trouble with this manufacturer and in 1909 decided to recommend another make of boilers, with the result that during the whole season of 1909 only two boilers of the kind he had handled exclusively the preceding year were installed by him.

With two exceptions he had switched every order.

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Plumber and Steamfitter

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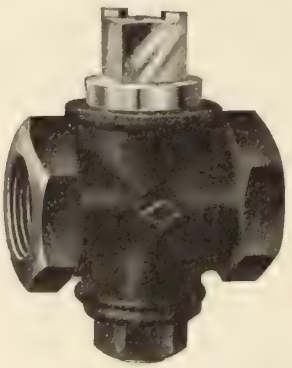

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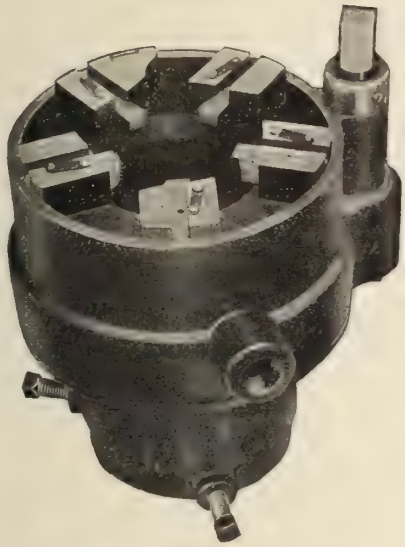

No. 22 "JARDINE"
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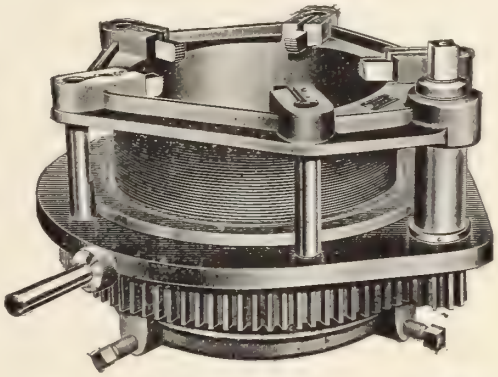

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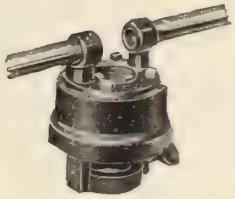
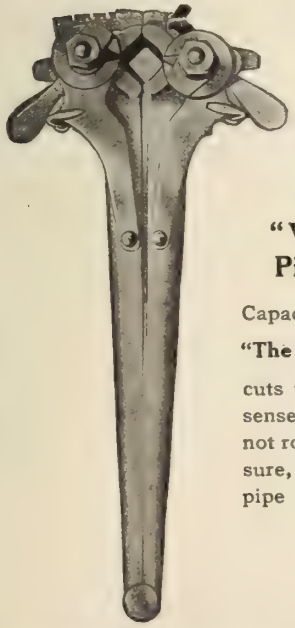


No. 9 "JARDINE"
Capacity ⅛ in. to 1 in.
Right and Left



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Capacity ½ in. to 2 in.

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TORONTO JULY 15, 1910

HAMILTON'S PLUMBING BY-LAW.

Hamilton has at last adopted a plumbing by-law, or the beginnings of one, it might better be said, it being but a short document of fifteen paragraphs and a date line.

It will be remembered that the Plumber and Steamfitter some months ago pointed out that Hamilton was a dumping ground for shoddy plumbing material and enjoyed a most uneviable distinction for a city of over 50,000 population without either a plumbing by-law or a plumbing inspector.

Now it has a sort of a by-law, one which has apparently been adopted in a hurry by men who were afraid to venture very far into the water for fear of drowning. But it's better than none at all as having something to amend the Hamiltonians can start amending as soon as they realize that their new toy is harmless. And the property owners who were opposed to progress will soon learn that the plumbing by-law will be a benefit rather than an injury to them.

But to be a benefit the inspection must be in capable hands. And here Hamilton aldermen have made a mistake. Inspector Anderson, who formerly looked after buildings and drains, will now oversee building and plumbing, while a new man, Inspector Kerr, will look after the sewers. Surely a capable master plumber or journeyman could have been found to handle the plumbing, and surely a city which boasts of the thousands which are being added to its population by the influx of new manufactures, can afford to do things right.

We won't criticize Hamilton's plumbing by-law. The city deserves credit for making a start, even if it's a poor one. And anyway Hamilton is far ahead of its old rival, London, where the property owners are still waving red lanterns and predicting disaster if a plumbing by-law is adopted and an inspector appointed.

May the standard of plumbing work performed in Hamilton be of a much higher standard in Hamilton in the future and may a competent inspector be soon appointed is the wish of the Plumber and Steamfitter.

AN ENGINEER—NOT A PLUMBER.

With the development of the plumbing industry on higher and more scientific lines it is more and more important that the young plumber of to-day should take the pains to make himself thoroughly qualified, not only practically but theoretically. He must be more than a mechanic; he must be able to plan for himself; to think out and evolve knotty points in sanitation and heating. At one time the correct wiping of a joint was a young journeyman's test of efficiency. He thought he had no more to learn than this. But the development that has gone on in heating and sanitation has brought greater demand upon his capabilities.

All level-headed plumbers are now endeavoring to raise the status of their industry. The National Association are working hard in this direction, and have a proposition before the delegates at the next convention of forming a Canadian Society of Sanitary and Heating Engineers. It is recognized that the plumber is now more than a worker in lead—as the name implies—he is in fact an engineer, and therefore should have the credit of being one.

In any effort made to improve the by-laws of a community, and thereby making the plumbing work more exacting, the Master Plumber of to-day takes a leading part. He recognizes that no one is more capable of pointing out and improving the defects of plumbing regulations than he is. Certainly he has an advantage over the inexperienced men who often constitute the Health Committee of a community. In doing this he is increasing the responsibility of the plumbing industry, but he is working for the public good, and the coming master plumbers must fit themselves for the higher work that is devolving on them.

We are hearing less and less now of those gibes at the want of skill and general destructiveness of the plumber. The public have realized that an important craft has been wantonly maligned. Difficult and most trying work is done quietly, and without any cheap publicity, while the health of the people is being safeguarded as it has never been before.

With the growth of the interest taken in the sanitation of a house, a customer takes more interest in the work. He asks questions, and it is to the advantage of the shop doing the job that these questions should be not only answered intelligently but courteously. Often the latter is more of a strain than the former, because when a man is engaged in a trying job he does not appreciate anybody coming round asking questions. But the effort is well worth making, for courtesy is a great business bringer, and this, combined with an intelligent explanation of why the installation is being done this way, or a certain trap put there, and so on, not only gives the customer a higher appreciation of the plumber but brings future custom.

To help forward the good work that is now being done by the farsighted master plumbers of to-day, and to nail down more firmly the fact that the plumber is an engi-

neer, the young plumber should qualify himself in every way to become a thorough sanitary expert. He should make himself proficient in general laws of sanitation, in the theory of plumbing design, mechanical drawing, and mechanics. A good knowledge of the various conditions under which certain designs may become a source of danger is also ascertained. In fact he should have a thorough theoretical training.

It is possible to do this with the books, trade journals, and plumbing classes existing at the present day. It is simply a question of energy. If a young man has enough energy to set aside certain hours of the evening for study he can easily master all he wants to know. True it is a great strain after a hard day's work, but the result is well worth the trouble. When once the reading habit is taken up seriously it is astonishing how easy it is to maintain it. And the more the memory is exercised the easier it becomes to retain what is read.

SHODDY PLUMBING WORK.

That some very shoddy plumbing work is done in Toronto was discovered last month when a master plumber moved into a semi-detached store and dwelling on Royce avenue and prepared to occupy the premises. Here is what he found:

The hot water pipe from the top of the range boiler was left hanging in the partition while the pipe from the hot water tap in the sink was connected to the cold water tap in the adjoining house. The cold water pipe connected with the tap in the sink was found with an open tee in the partition behind the base board.

All bath room fixtures leaked owing to loose couplings and had to be reconnected.

The gas pipe was not carried to the meter, being left hidden in the partition.

When asked for information as to the "plumber" who had taken out the permit and "done" the work, Dr. Sheard, Medical Health Officer, declined to give the name as it might render him liable for action. He ordered an inspection, however, the inspector reporting that the job was in working order when he had visited it. The poor work was in finishing after the first inspection and the final inspection had not been asked for.

The incident is illuminative of the conditions which exist in the plumbing trade in Toronto. Contracts are taken at prices which make it necessary to "skin" the job in order to break even or make wages.

And it's this kind of work which brings plumbers generally into disrepute. All plumbers, masters and journeymen, should do their utmost to expose the shysters who do such work.

MAKE COLLECTIONS PROMPTLY.

According to the Metal Worker the majority of plumbers and sheet metal workers in the Western States present their bill as soon as the job is finished if the work has been done as the boss thinks the contract called for. One reason for this is if there is any defect, or if the owner finds fault, the men who did the work are still in the boss' employ, and he can jack them up and get the reason for the complaint. If he waits for a month or two before he sends in his bill the men may have "moved on," and he is unable to find out whether the complaint is a just one or not.

OFFICIAL NEWS
N. A. M. P. & S. F. of CANADA

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Chairmen of Committees,—Legislation, H. A. Knox, Ottawa; Sanitary, P. C. Ogilvie, Montreal; Apprenticeship, J. Griffin, Montreal; Essay, E. Russell, London.

Next Convention will be held at Toronto, August 31 and Sept. 1, 1910.

ARRANGEMENTS UNDER WAY.

Arrangements will be completed during the coming week for the big convention to be held in Toronto the end of next month. A committee will be formed, the various suggestions made will be gone over and definite plans drafted.

Little has been said about the progress made by the Toronto Association during the past year. Twelve months ago there was practically no organization whatever in Toronto, but to-day the Master Plumbers' section of the Retail Merchants Association is nearly 100 strong and a much better feeling exists amongst the masters throughout the city. This was evidenced by the attendance of about 150 at the ball game at Dufferin Racing Park last Saturday between the supply men and the masters. A game between the masters in the Eastern and Western portions of the city is now proposed.

A GREAT TRADE HINDRANCE.

At the recent annual meeting of the British Columbia Retail Hardware Association, the president remarked that "Price cutting is the greatest hindrance to the success of our association." By implication at least he no doubt also meant that price cutting is the greatest hindrance to trade generally.

There is no question about it. The reduction in profits which follows the cutting in prices is perhaps not the worst feature of the price cutting. The worst feature of cutting prices is the demoralizing effect which it has upon trade. It is resorted to by one merchant in order that he may get trade from another. It is the resort of the weakling, not of the strong merchant. It is an illegitimate business practice and as such cannot but do harm.

Let there be all the competition possible but let it be conducted on sound business principles and not upon unsound principles.

Price cutting will no more build up trade than destroying the roots of a tree will increase its fruit-bearing qualities.

Let the competition be not in who can sell at a price nearest cost, but who can adopt the best and most progressive methods of doing business. This makes trade more solid and permanent and puts its conduct upon a higher plain. To co-operate with this end in view should be the object of all merchants.

Price cutting prevents this happy consummation.

A traveling car, illustrating sanitary methods of preventing disease, recently started on a tour around the State of California. It contains an exhibit showing how typhoid fever, tuberculosis and other diseases may be prevented. Surgeon W. Colby Rucker, of the Public Health and Marine Hospital Service, is in charge of the car.

The Plumbing Business

As long as the plumber clings to his traps, tubs, pipes and wrenches with a mind rising no higher than the mechanical details of his trade, he will be merely a "plumber." This series of articles will deal more particularly with the business end and readers should derive benefit from reading them.

Written for the Plumber and Steamfitter by Charles H. Denison.

CHAPTER I.

We are improving. After having bumped along down the centuries from Asia to America the plumbing trade has finally acquired the dignity of being classed as a business. We have to-day the plumbers' trade, the plumbing business, and the science of sanitation. It seems to have been customary to begin the discussion of nearly any subject bearing extensively on the trade by holding up the Romans or the Greeks, and their sanitary methods. Those Roman rulers have passed away and have been a long time dead at that. The ruins of their efforts remain, in places, but why hold up our hands in wonder at the same when we of to-day have them beaten to a finish? We will pass them up and proceed, in some parts of the series, to give the modern inventor and also the modern mechanic at least some of his just dues, omitting further comment on the works of some scab emperor who reared monuments and palaces by the blood and sweat of thousands of miserable slaves.

If the evidence of the past is to be relied upon, the plumber of by-gone days in America was pretty much of an all around man. He made all his brass goods, soil pipe, water closets, bends, traps, and lined his tanks and tubs. Speaking figuratively and collectively, the whole proposition seemed to be bunched under one hat. As time passed the manufacturing end of the deal grew and branched out for itself, ever expanding.

Plumber in a Rut.

The plumber continued to cling to his pots and his pipes, the hand work growing less and less year by year, as machine products appeared and captured the market. Did the plumber, in the meantime, expand mentally, financially and seek to become a business man? He certainly, did not, but merely stayed in the rut minus the manufacturing end of the game. Thus he became (and many are this day in a similar condition) a mere machine, installing products made by other parties. Because of his trade he could not sell the goods and let some one (or the owner) install the same and, tired out with his day's work, the time did not seem to come handy for him to acquire much additional education.

Therefore, the plumber has, seemingly, ever hung fire along the progressive lines of business. Whatever he may have acquired in the way of business and system has been forced upon him by circumstances; you very seldom observe a plumber making circumstances. There are to-day in America many plumbers in business whose financial standing is far below zero and some of these same parties are carried along on the books of some jobbing house, thus such plumbers are merely laboring for some one else. They are far less independent than an ordinary journeyman. And why? Simply because they do work instead of running a business.

A Day of Big Business.

When the natural progress of the age has forced matters to a position where plumbing contracts rise to amounts running all the way from $100,000 to $225,000 and over, it becomes evident that some business methods must be made use of or a smash up will take place. Hit or miss ways no longer go if a man desires to succeed. People are demanding a view for their money. They desire to see what they are going to buy and that calls for a show room and more or less of a stock; the basement plumber is no longer in it, unless he may be considered relatively as doing "jobbing."

Therefore to catch the work, display the goods and figure the contracts a man must have, what? Why it answers for itself, "a place to do business." Having found the location and at last awakened to the fact that a business must be conducted, is the average plumber equal to the occasion? From an experience and observation covering nearly 25 years, I am frank to say that he is not, but that, in some parts of the land he is rapidly improving, and we will hope the individual will leaven the mass. It makes me disgusted when I read the articles some people write in regard to the men and the business. I will admit that I have, at times, done some "roasting" myself, but I never tried to make the point that the plumber was helpless nor feeble-minded. There are brains, good brains and plenty of them in our craft and the business, but of what use are brains if they are not exercised?

Power Lies With Himself.

I know from past personal experience that it is entirely possible for a man to make of himself nearly anything that he may desire. So when a man shows by his line of action that he does not know how to run the game as a business, I claim that it is entirely his own fault and he can acquire the information, if he so desires. If he don't and will not, he is working very much against not only his own good but also against the interests of the whole trade and business. Before long such a man will not be allowed to do business in our line at all, he will be barred from the ranks by his own ignorance and stubbornness. For how many more years do you suppose the man with good common sense is going to allow a business of the capabilities that ours has, to be ruined by people who are too lazy to even attempt to acquire the information to run it properly?

The man who runs a plumbing shop has everything to gain and nothing to lose (except a little time) when he takes means to get an education along the lines of business. The mere telling of certain points will not answer as half the time the information goes in one ear and out of the other. The joining of an association will not do it either, for while it is commendable to belong to an association, we all know that it is the interested few who do most of the work, while the many sit back and find fault, or else come in with a vote bunched at the wrong time and place, thus causing the association to many times take a very different position from what was desired for the most good.

Seemingly it would appear that progress must come from individual effort. Self interest ought to indicate that self help is a sure means; develop the brains, the muscle will take care of itself. A man is, we will say, a good mechanic. He has worked at the trade ten or fifteen years and saved perhaps $1,500, or possibly $2,000, and decides to go into business for himself, considering that from his experience and by using his friends he can make some money. What is this man up against?

Obstacles to Overcome.

First,—The shop, its arrangement, tools and fittings. This he will handle, generally all right, for nearly all of his time, previously, has been passed either in or connected directly with the shop.

Second,—He will have the men to deal with and here he may or may not make a mess of things. It depends upon his disposition and character.

Third,—He has the proposition of the stock of fixtures with which to contend. Here he is at sea, for his capital is limited, his trade yet remaining to be established, and his experience in disposing of the said fixtures is, as yet, nothing.

Fourth,—He must yet learn when, where and how much stock to buy and how to buy to the best advantage.

Fifth,—He has yet to find out how much a job costs. Heretofore he has been acquainted with merely the labor end of the proposition; he will soon find out that there are many other items which add very materially to the cost of each job done.

Sixth,—As a journeyman, his work was, in nearly every case, found for him. "Bill, pack up the tools and go to 498 Third Street, and rough in a bath-room." As a master he has to dig out and find the bath-room for some other "Bill" to rough in. Here, again, he is distinctly at a disadvantage, for the first year. "What jobs have you ever put in?" is the first question he is liable to be asked.

Seventh,—The selling game. Here he is in the dark quite completely. He is not alone, however, for there are but few good salesmen in the plumbing business proper.

Broke in Two Years.

I could mention several other points, but enough have been given to show that, with no more experience and education than the average journeyman is known to possess, he is beaten at the start and stands a first-class show of going "broke" in two years or less, unless he takes most efficient means to get wise to the game he is trying to play. He should study carefully a year before he starts out. He should consider the city or town in which to locate, he should have money enough to live on for at least one year provided he never contracted a single job. If such matters were considered carefully, there would be fewer to start in the business, but there would be less failures and more good business men doing a creditable and profitable plumbing business throughout the country.

System for KeepingTrack of Stock Used on Jobs

Plumbing Firm at Moose Jaw, Saskatchewan, Send an Interesting Description of How They Keep Records of Stock Used on Jobs—Able to Tell on a Minute's notice How Many Fittings are in Stock.

WRITE SOMETHING YOURSELF.

The accompanying article, written by A. D. Henrich, of L. B. Henrich & Co., Moose Jaw, Sask., who says he is more accustomed to handle plumbing tools than a pen, is the kind of matter which will be read with marked interest by hundreds of readers of The Plumber and Steamfitter.

Will some of those who appreciate Mr. Henrich's article return the favor by sending a description of their shop system or something else for publication. The editor will touch up any spots if required.

It is of the utmost importance for a plumber to have his stock in such a condition as to enable him to do his business satisfactorily. Nothing seems more annoying, than to find in the full swing of the business, that the stock of some articles has gone down and to be compelled to go to a competitor to ask for this or that article. On the other hand it is of great satisfaction to be able to control the outgoing and incoming stock as well as that which has been used on the different jobs. In consideration of these facts we have worked out a system, have installed it for some time and which seems to meet all the above requirements. In the following we shall try to illustrate the same.

We have arranged our stock book on the loose leaf system, a sheet of which is partly illustrated in Fig. 1. The size of the sheet being 11½x9 in., allows 5 such columns as the one illustrated. The different articles occupy a whole sheet, half a sheet or a column respectively, according to the quantity used. For example the ½-inch elbows occupy a whole sheet in our stock book on account of their being much used. We have taken that page to illustrate the use of the book. Looking at the illustration you will perceive the headings: Cr. Job No., Dr. Job No.; the first (credit) representing the stock in your bin and that eventually coming back from different jobs. The second (debtor) representing the stock going out to the different jobs.

Keeping Track of Stock.

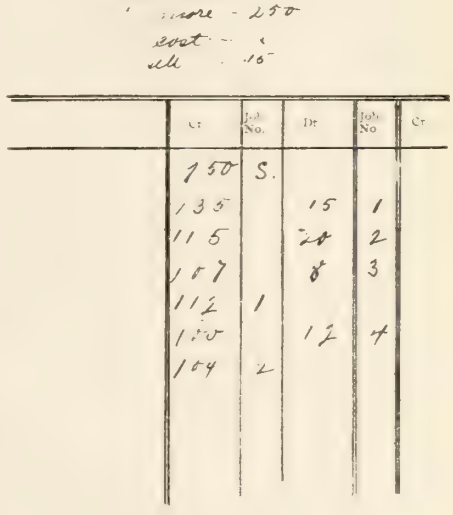
Take it for granted that we have 150 ½-inch elbows in stock we mark S under the heading: Job No., signifying, that we have that much in stock at the time we start work in the season or at any time. We take out 15 elbows to job 1, leaving us 135 to our credit, 20 to job 2, leaving 115,, 8 to job 3, leaving 107.

In the meantime 5 elbows come back from job 1, giving us 112 to our credit, another 12 go out to job 4, leaving 100 in stock and 4 again come back from job 2, giving us 104 to our credit.

The job numbers represent the names of the parties for which the work is being done, and which are registered at a convenient place in the stock book. For example:

Job No. 1—Mr. G. Bedford.
" " 2—Mr. N. Neil.
" " 3—Mr. M. McIntosh.
" " 4—Mr. F. Jones.

It is readily seen, that in the above manner we are enabled at any time to see where our stock went to, how much of it has been used, and most of all, how much stock we have on hand and when it will be necessary to replenish



Cr	Job No.	Dr	Job No	Cr
150	S.			
135		15	1	
115		20	2	
107		8	3	
112	1			
100		12	4	
104	2			

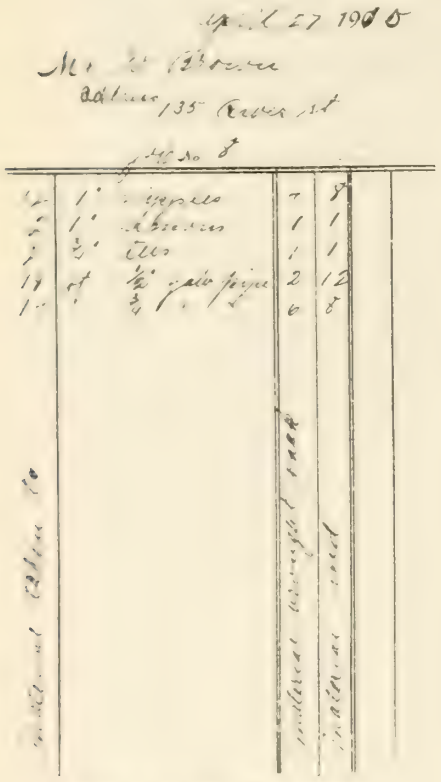
Part of Page from Stock Book.

the same. The danger of running out of some article, and overstocking in some is therefore eliminated. In connection herewith we put down a certain number with each article, as the amount of stock which we wish to keep on hand, as illustrated.

The book may also be used as a cost book by marking the cost of each article on top of the page, and also the selling price which will enable the bookkeeper to make out the accounts without any assistance.

Material Returned.

In connection with the stock book we use the indexed file of the "Simple Account File Co., Fremont, Ohio," one form of which we illustrate in Fig. 2.



Form Used by Workmen.

At the time we commence on a job, a list of material is written out by the foreman, or the master plumber himself, which is copied into file (see Fig. 2) by the bookkeeper and afterwards the different articles are deducted in the stock book (Fig. 1). When the job is completed and any material not used, the same is marked in the column "Material returned" (Fig. 2) and the difference gives us the material used as illustrated.

The number of the different articles returned is entered under the column "credit" in the stock book (Fig. 1) with the job number where they came from. The difference, being the material used, is then of course entered into the loose leaf ledger and handled as any ordinary loose leaf ledger or bookkeeping system.

If it is desired to find out the profits made on a job this may be done by marking the cost and selling price in the vacant columns of the file form (Fig. 2) and striking the balance.

Why Some Master Plumbers Associations Fail

A Few of the Danger Marks Pointed Out by H. F. Baillet in an Address Before the New Jersey Master Plumbers' Association—Practical Advice for Canadian Plumbers and Fitters.

The most formidable barrier to success that presents itself to any local association of master plumbers is what we like to term the apathy of its members in general. This should by right be termed the hoggish selfishness of the average human being.

Master plumbers, as such I find them, are not much, if any, different from the average man. For everyone who is self-sacrificing, punctual, diligent and attentive in the necessary work and business of his association we will find about twenty who are careless and indifferent. Where one man realizes that in order to obtain and sustain a successful and useful organization he must work heart and soul unselfishly in and out of season for the advancement of the cause, there are twenty who do not intend to bother themselves about it at all. They fully expect and do obtain the benefits of the other fellow's work and toil without lifting a finger to help him obtain it; nay, more than that, they demand it as a right and are highly incensed and ready to drop their membership like a red hot coal if everything is not done and taken care of ship shape by the other fellow.

This is not only true of master plumbers, but is characteristic of mankind, for every one individual who has a sense of duty and an unselfish wish to be useful to his fellowmen there are twenty individuals who will do nothing either for their fellow or for themselves, unless driven by force of circumstances outside of themselves. This being the case, there is little hope of ever being able to entirely alter or amend what we generously call "The apathy of members in general."

Willing Members Must Work.

The only salvation in these cases is for the clear-sighted, honest and willing members to do still a little more, and work still a little harder, that their local association may meet with a greater measure of success and prove itself of further usefulness to all the members and to the community af which we form a part. Any opportunity existing or possible to create that will force a part of this white man's burden upon the other twenty may and should be legitimately made use of. Only be careful that their work is followed up closely or you will soon find them dropping by the wayside, overcome with the unusual burden of responsibility.

In this age of keen competition and especially during a period of industrial depression, such as we have been experiencing the past two years, one of the very evident factors working against the successful carrying out of organization work is what we may term the bread and butter question. We all like a little butter on our bread. To keep continually munching dry crusts does not make us feel especially friendly or lenient to the other fellow who has butter on his, especially if he has the habit, as sometimes occurs, of showing us his butter without offering even a lick.

When we are doing fairly well ourselves we are likely to look leniently upon the criminal who dares to do better than we are doing, but when things are going dead wrong, business is "On the pig!" and we are pinched for the wherewithal to meet our bills, we all are likely to become nasty and irritable. We are then ready to look for trouble, and not finding it, we are inclined to try to make trouble for our fellow member; not because it benefits us, but because the other fellow has no right to be swimming in gravy while we are gnawing a soup bone.

One or two men with a grouch of this character can and sometimes do disrupt an association that up to that time apparently has been doing nicely. Especially fatal is such a condition in case of a young and inexperienced association. The willing members become disgusted and disheartened, the work of several years is all undone in a couple of weeks and is doubly hard to do over again. Distrust and antagonism of personalities have crept in and often no reorganization can be effected until time has erased some of the personalities and practically a new set of plumbers occupy the field that can be prevailed upon to enter the association.

Let us then be very patient and forbearing with the man who is in quod. It is our duty to help him all we can,

as individuals and as an association. Help him if possible to lighten his burdens, strive patiently and perseveringly to show him that his interest is not in kicking over the feed trough, but, if necessary, give him a little of our butter that he may again become a rational human being. We will both be the better for it.

Danger in Extreme Discipline.

Another thing which often drags an association down is an attempt at galling discipline. A certain amount of discipline is wholesome and necessary. When, however, it is carried to extreme and is made humiliating to the individual disciplined, it becomes a dangerous expedient. Laxity and disregard of rules and regulations, often to the extent of practical and open noncompliance on part of the members, are just as suicidal to a good and healthy organization.

We should therefore be very careful to reprehend with mercy and admonish with justice. For every man's self-respect is precious to himself, and when you destroy a man's self-respect you cannot expect him to have any respect for your organization or for the individuals composing it. Whatever discipline it is absolutely necessary to inflict should therefore be meted out in strict confidence, without any flourish of trumpets or ostentatious parade of power.

This applies equally to cases outside of the members of our associations. Always remember that the old saw, "There are more flies caught with molasses than with vinegar," cuts just as true to the mark to-day as it ever did. We must be absolutely just and a little more than fair to our members, to our supply houses and to our customers, if we would prosper as associations or as individuals. Getting our pound of flesh may be a very pleasant experience and may tickle our self-love, but too often we find that we pay too high a price for it and have an elephant on our hands after we get it. Better go more than half way and let the obligation rest on the other fellow.

Evils of Overzealousness.

One of the most frequent causes of disruption of associations, and this applies especially to new locals and locals that are just getting their growth and are beginning to feel themselves some pumpkins, is overzealousness, trying to be too big for their boots. This is sometimes the fault of the one charged with the organization work directly. In his zeal and endeavor to get the local association started he is very likely to paint a glowing picture of what can be gotten out of it. A nice little picture is sometimes painted of how they can build a 10-ft. stone wall around their town, get everything in sight and sometimes undreamed of and leave everybody else out in the blizzard.

Anyone will get out of an association just what they put in it, in the aggregate. There are certain things that can be accomplished by an association of master plumbers, certain conditions that can be ameliorated to a greater or less extent, according to local conditions; certain objects that can be gradually and progressively worked up to, and certain things that we would like to have, but which the interests of others and our own unfitness probably forbid us.

Every man who is intrusted with the task of organizing or advising a new organization and also our older locals, should use every care and precaution not to excite dreams that can never be fulfilled. Nothing will more quickly or more surely disrupt a new organization than to have the members come up against a stone wall the first thing. We should all be very careful and conservative in approaching a plumber who is not a member not to give him a false or exaggerated idea of what our organization can accomplish.

To put a proposition to a man or a body of men on which you cannot make good is the biggest mistake that can occur. For when he or they find that what has been told them is not so, you have lost their confidence forever. There are enough good things about our organization; there are many splendid features about it, which we all know, that it is the height of foolishness to let any one labor under a wrong impression regarding the benefits derived from membership.

Especially urgent is the necessity of impressing upon new timber the fact it is not all "beer and skittles"—that there are duties connected with membership, and that the first and greatest duty and the one upon which the whole superstructure is reared is contained in the duty which our state association has adopted as its motto; that is, the duty of absolute loyalty. Without this we can accomplish nothing. With it, strictly and honestly lived up to, we can accomplish anything within reason that is good for us.

There is one peculiar thing about master plumber associations. In most other organizations we will find a scramble for office, and often they are disrupted by foiled ambitions of preferment. In our local associations, as a rule, the contrary holds good. It is usually a hard task to find men who will accept the offices.

And so much, so very much depends upon the activity, honesty of purpose and ability of your officers. Many a promising beginning has petered out in failure through the carelessness and indifference of those upon whom had been placed the duties of office. While on the other hand often an association, that for years has been in the ranks of the "also rans," has taken a new lease of life and has shown remarkable usefulness to its members through placing in office men who have been unselfish, painstaking and active in furthering the work intrusted to them.

Financing an Association.

Another item that is absolutely necessary to success is money. Sufficient means must be at hand to do with, otherwise the best intended efforts will miscarry. Every local association should place their dues at a point high enough to cover the necessary expenses of an organization. Nothing will disgruntle the average member quicker than to have periodical demands made upon his purse for extra expenditures.

Make your dues as low as you can with safety to cover your necessary expenditures, but make them high enough to cover them. Passing around the hat at every other meeting for some special expense is unworthy of a master plumbers' association and will very soon cause your meetings to be attended by empty chairs.

A substantial treasury has never yet disrupted an organization, but an empty treasury has put more than one out of business. Furthermore, collect often; let the payments be small and often and go after them. A quarter's dues is usually cheerfully paid. A half year is harder to get, a year makes them wince, while two or more years' back dues are almost impossible of collection.

At the present time of so many different interdependent organizations many of our master plumbers' associations are hampered in their usefulness by too many irons in the fire; city, county and state associations of master builders, county and extra-territorial leagues of master plumbers; wheels within wheels, circles interlocking with circles; each and every one of which is a pecuniary expense to the members and each of which demands a certain amount of time and attention—time and attention which are taken from the work of the local association.

A Plumbers' Association Best.

All of these things are good, within a circumscribed interest, and sometimes very good for a limited time or special occasion, but none of them, not even the best of them, can compare in usefulness and benefit with your master plumbers' association, local, state and national, if we will only give to these the support and attention; in other

words, the loyalty in purpose and deed which they so richly deserve.

I believe a local association of master builders, composed of delegates from the various allied building industries, is a good thing locally, and to meet the demands of the labor market; also to take up matters in which all building interests are concerned. But the master plumber's first care should be for his master plumbers' association, for in the clash of interests inherent in allied industries the master plumber as an individual member becomes lost, his peculiar interests as a plumber are lost sight of unless he has his master plumbers' association behind him.

It is evident therefore that all other affiliations are only of value when backed by your master plumbers' associations, local, state and national. These, therefore, should be our first care and should receive our complete and loyal support. They take care of our interest as plumbers. That comes first! Our interest as builders, as employers of labor connected with allied trades, may be important. But our interests as plumbers comes first and this fact should never be lost sight of.

Too many outside affiliations have wrecked more than one master plumbers' association. The exigencies of the moment have shown them a value in affiliations of this character, their optimism has magnified this value until the value of their plumbers' organization has been lost sight of. When the exultation of a strike victory or a similar occurrence has passed off they find themselves stranded, with their local association of master plumbers disrupted. Great good there undoubtedly is within narrowly circumscribed limits in all these things—master builders, district councils, territorial leagues and whatever it may be. But there also lurks in them a grave menace to the welfare of the master plumbers' association. And that is the only interest, the only welfare we are considering in this paper.

Go slow in your ambitions, get a firm footing for every step you take and give your honest and loyal support to your associations and their officers. If you will do this they will prosper and cannot fail to be of utmost usefulness and benefit to you as master plumbers and as good citizens of your various home communities.

School House Heating and Ventilation

"Don Rex," in The Plumbers Trade Journal, Discusses a Subject Which Will Interest Most Steamfitters at the Present Time.

We are now rapidly approaching that one period of the year in particular when, in many localities, the school buildings will be overhauled and repaired, or new additions made thereto, or complete new buildings erected, and the local plumber and steamfitter is sure to be consulted with reference to sanitary matters or the proper method of warming the new or renovated struture.

School boards or trustees in charge of such matters are now quite alive to the fact that proper means of ventilating must be provided in connection with the heating and, except in isolated cases, the value of adequate ventilation is now fully appreciated.

It is true that a majority of the older school buildings are still without a ventilating system. However, those in such shape are being torn down rapidly or reconstructed to meet the requirements in this respect and thanks to the stringent laws in force governing the ventilating of schools and public buildings, the time is near at hand when all structures of this character will be necessarily provided with a suitable heating and ventilating apparatus. The local plumber and steamfitter should so familiarize himself with all details of the subject that he will be competent to thoroughly advise the authorities in charge in an emphatic manner, and be able as well to properly install such plants as may be required.

Amount of Air Necessary.

One of the first questions asked will invariably be: "How much fresh air is necessary for proper ventilation?" Before proceeding further would state, however, that it is not possible to fully discuss in this article the many details and features of this important subject—we can suggest only the more pronounced and vital points.

As a rule, school buildings as now erected are divided into class rooms for the accommodation of forty or fifty scholars per room. Experience has demonstrated that not less than 300 cubic feet of space should be provided for each occupant or scholar, particularly in schools located in the city. Where the air of a room is vitiated, or rendered impure, only by the exhalations of the occupants in the process of breathing, a pure air supply of 30 cubic feet per scholar per minute is considered adequate for a school building situated in an open healthy district. A greater supply than this is recommended, however, by some authorities. Dr. Billings (considered a good authority) advises 2400 cubic feet per hour per person for schools and churches. Professor Woodbridge, of the Massachusetts Institute of Technology (also an acknowledged authority on the subject) suggests from 2,000 to 2,500 cubic feet per hour per scholar. The Massachusetts state law requires a minimum of 30 cubic feet per minute per scholar, and this schedule

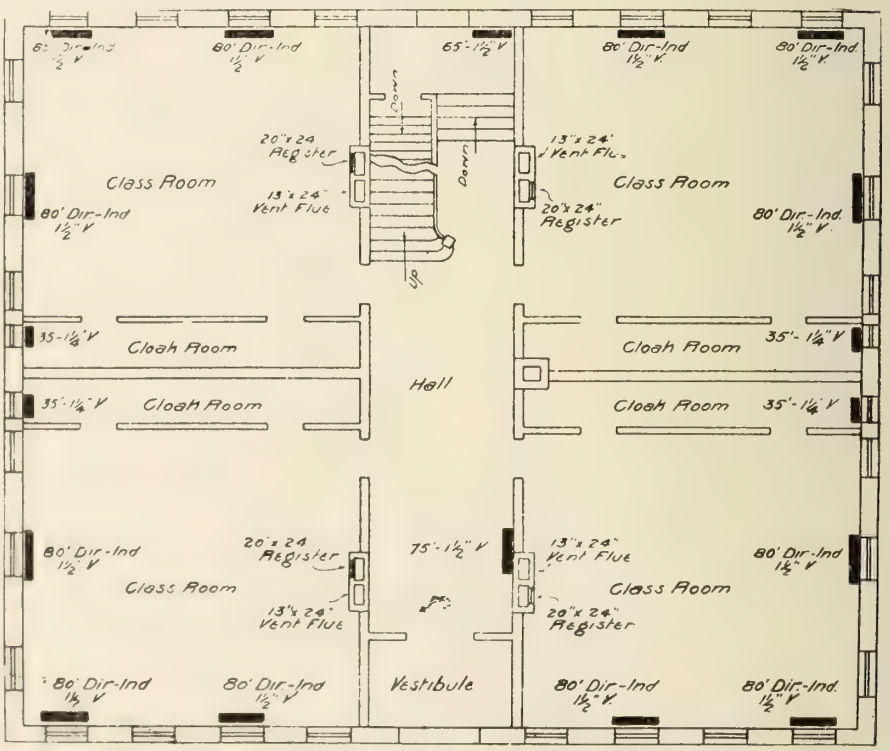


Fig. 1.—First Floor Plan, Each Class Room is about 25 x 30 feet.

has been generally accepted by other state officials in charge. It should be the minimum amount of fresh air provided for schools, churches or theaters where the occupants remain at rest a large share of the time.

For buildings located in a neighborhood where the air is contaminated with smoke, dust or gas from adjacent factories, or where gas is used for lighting purposes, extra provision for fresh air should be made.

Mechanical System Best.

There is no better method by which a school may be heated and ventilated than by a mechanical system, that is to say, a system by the operation of which the fresh air is passed over heating coils and, by the use of a fan or blower, delivered into the various rooms at a sufficiently high temperature to warm them. As the supply is delivered into the rooms at a slight pressure, the foul or cooler air is forced out through the ventilating flues. This method is adopted largely in city schools and particularly in those where it is necessary to wash and filter the air. In the average town or village local conditions are such that this treatment is unnecessary and a more simple system may be employed with beneficial results.

Probably the less costly of all positive methods, in both operation and installation, is that provided by a low-pressure steam-heating apparatus, using direct-indirect radiation for all school or class rooms and direct radiators for the cloak rooms and halls. All radiators in school rooms are placed over box-bases, connected to an opening in the outer wall, through which connection fresh air is admitted to the room, passing into the box-base and thence upward over the heating surfaces of the radiator, by which action it is tempered or heated. With a system of this character the foul air may be removed through ventilating ducts, the draught necessary to suck the supply from the rooms being provided by placing a steam-heating coil of sufficient size in each vent flue, which thereby heats and expands the air and causes a sufficient current upward to draw the foul air from each room into the ventilating flues. Such coils are designated as "aspirating" coils. With electric power available in nearly every town, a better method is to connect all of the tops of the ventilating flues in the attic into one or two ducts leading to a shaft which extends through and above the roof. A ventilating hood should be placed on the extreme exposed end of the shaft to keep out the rain and snow. Inside this shaft and in the attic of the building an electrically-connected propeller fan of proper size should be installed. This fan may be started, stopped, or its speed regulated, by a rheostat placed at a convenient point in the principal's room.

A Typical Job.

For purposes of illustrating and discussing a heating and ventilating apparatus of this character we will consider a two-storey, eight-room school, of which size there are thousands scattered throughout the country. Fig. 1 is a plan of the first floor; Fig. 2 a plan of the second floor, and Fig. 3 a plan of the basement. Each class room is approximately 25 x 30 feet in area, with a 12-foot ceiling on the first floor, and a 11-foot ceiling on the second floor, and each has seven windows 3½ x 7 feet in size. Figuring first all radiation as direct surface, not forgetting to add the necessary 25 per cent. for direct-indirect, and making suitable allowance for the spasmodic character of the heating (steam being turned off during the night), we have 240 square feet for each of the first floor class rooms and 225 square feet for those class rooms on the second floor, the surface being divided into radiators for each room. The cloak rooms require 35 square feet, the supply room 40 square feet, the first floor hall 140 square feet, and the second floor hall 100 square feet, making the total for the entire building 2,420 square feet, of which 560 square feet is direct and 1,860 square feet direct-indirect radiation.

Figure 3 shows the piping arranged in such a manner that aspirating coils are provided for the ventilating flues. Each of these coils contains 60 square feet of iron pipe, which is hung on the inside of the flue above the ventilating register. Making the necessary allowances for exposed piping (the mains and branches are purposely left uncovered to warm the basement) and for the total of 480 feet of pipe coil in the ventilating flues, we find a boiler of 4,000 or 4,100 square feet capacity will be required for good work.

We should prefer to use a fan to remove the foul air, and while the first cost to install this appliance would be considerably more than the price of the aspirating coils, the boiler need not be so in the former case—a 3,500 square foot boiler would be ample—and the running expense of operating the fan would not greatly exceed the cost of furnishing heat to the aspirating coils.

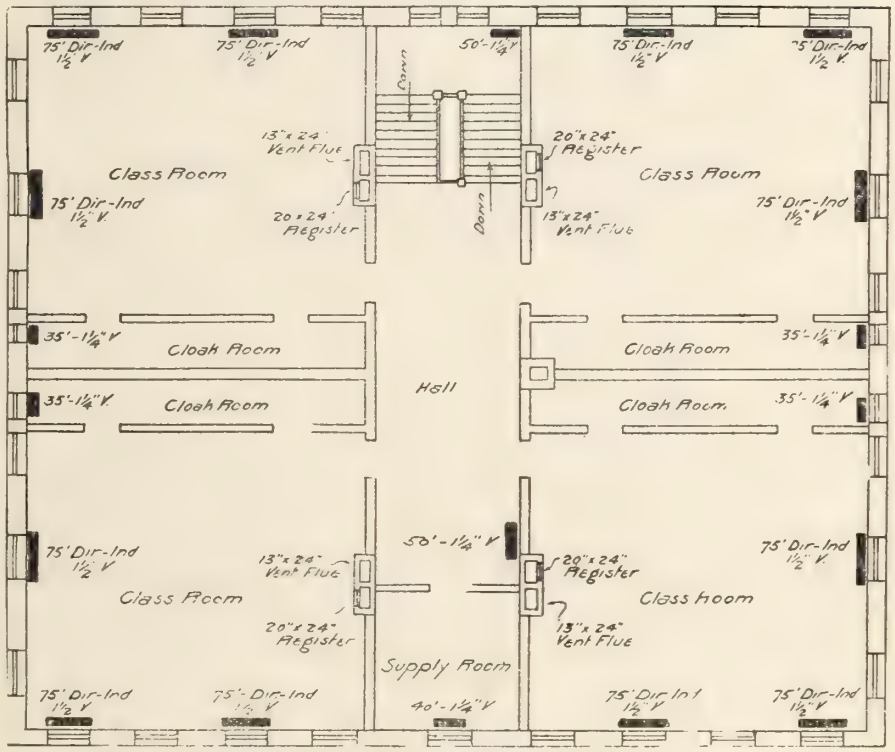


Fig. 2.—Second Floor Plan, Each Room has Seven Windows.

Number of Pupils.

For purposes of illustration let us assume that forty scholars are to occupy each of the eight class rooms. This will not allow the suggested space of 300 cubic feet per scholar. In this connection we would state, however, that outside of the city districts this amount per member is usually somewhat less. Forty scholars with an allowance of 1,800 cubic feet for each will require 72,000÷9,000=8 or the number of complete changes of air per hour. In estimating size of ducts we figure on low rather than on high velocities.

The ventilating ducts are 13 x 24 inches, or 312 square inches in area. The

ventilating registers are 20 x 24 inches, or 480 square inches in area, being greater in area than the flues in order that the velocity of the air entering the flue will be reduced to such a degree that no unpleasant draughts will be developed or experienced by the occupants of the room.

The galvanized iron ducts in the attic with sizes marked are shown by the illustration Fig. 4, which also shows the change of direction is necessary a generous curve of the pipe should be made in order to avoid friction as much as possible. The ventilating shafts shown on the plans are made of brick and extend above the roof. This construction is absolutely necessary if a system of aspirating coils is to be employed, and while such a type of construction is proper for a fire-proof or semi fire-proof structure, it is not essential when the floor rooms should extend downward only as far as the floor of the first storey, and those for the second floor rooms should extend only to the floor of the second storey. The saving afforded by building the ventilating ducts in this manner, together with the saving secured by omitting the aspirating coils and reducing the size of boiler, should in a large measure pay for the installation of the fan and the cost thus reduced.

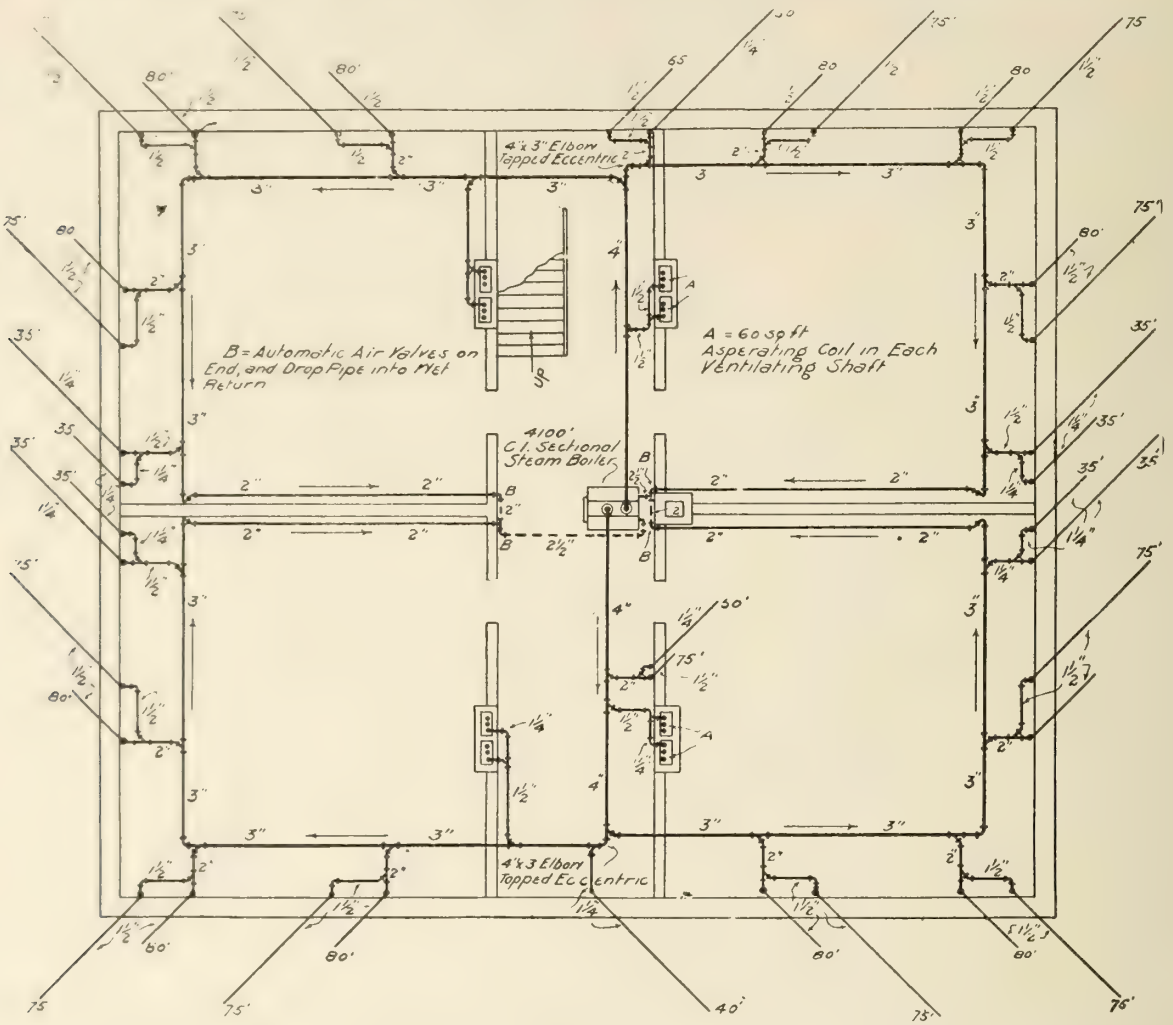

4"x3" Elbow Tapped Eccentric
B = Automatic Air Valves on End, and Drop Pipe into Wet Return
A = 60 sq ft Aspirating Coil in Each Ventilating Shaft
4100' C.I. Sectional Steam Boiler
4"x3" Elbow Tapped Eccentric

Fig. 3.—Basement Plan, Piping arranged so that Aspirating Coils are Provided for the Ventilating Flues.

size of the fan chamber, the fan and the shaft through the roof. The fan, a 48-inch direct-connected propeller fan, is set level and supported on wood frame-work inside of the fan chamber. Running at a speed of from 350 to 400 revolutions it should deliver approximately 20,000 cubic feet of air per minute. The fan chamber is 5 x 6 feet in size, 5 feet high at the sides, with a cone-shaped top extending to the round ventilating shaft, which is 4 feet in diameter, being of the same size as the fan.

Galvanized Iron Ducts.

In building and installing the galvanized iron ducts, which connect the top of the ventilating shafts with the fan chamber, sudden and sharp turns in running them must be avoided. Where exhaust fan system is used. With the latter, ordinary tin-lined ducts, studded, lathed and plastered, are sufficient for the purpose. The vent flues for the first

In operating a direct-indirect heating system in a public school a saving can be effected in maintenance by instructing the janitor as to the proper method of

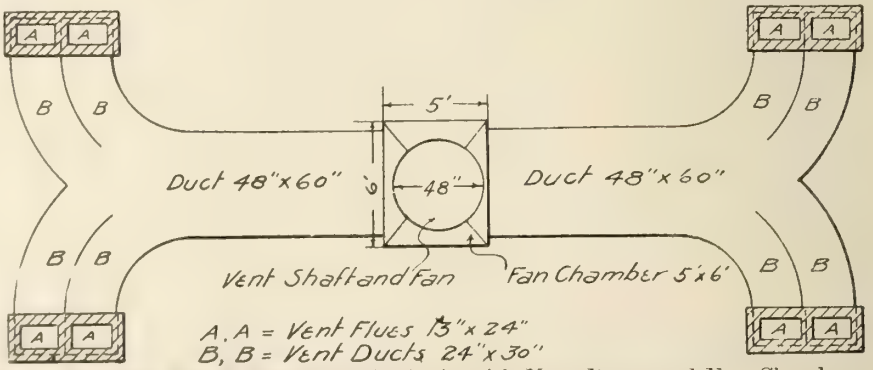


Fig. 4. Showing Top of Vent Flues in Attic with Vent Ducts and Fan Chambers.

attending the same. It is apparent that no ventilation is necessary when the rooms are unoccupied by the scholars. After the session has been dismissed the janitor should allow the fan to run while the floors and walls are swept and dusted. He should then shut off the power, close all of the cold-air supply dampers to the direct-indirect radiators and bank the fire in the boiler for the night. In the morning he should use the direct-indirect radiators as direct, that is, with the cold-air dampers shut, until the building is thoroughly warmed and the school session started, when the cold-air dampers of all direct-indirect radiators should be opened and the ventilating fan set in motion. By this method of operation the ventilation of the building is then taking place only while it is occupied, possibly six or seven hours a day, and the operating expense is thereby reduced to a minimum.

A careful study of the plans submitted with this article and a little general knowledge obtained regarding this important subject of ventilation should give the steamfitter the information necessary to answer intelligently any ordinary questions the local school authorities may ask on this matter.

HAMILTON'S NEW BY-LAW.

1. The Building Inspector appointed by the Council shall also act as Inspector of Plumbing, and shall be called the Building and Plumbing Inspector.

2. In addition to his duties as Building Inspector, it shall be his duty to enforce the provisions of this by-law and to inspect all fixtures installed after this by-law comes into force.

3. All soil pipes within the walls of any house or building shall be of cast iron when not covered with earth, and shall be continued at least two feet above roof and above any opening within ten feet of such pipe and be left open so that the whole of the inside drainage may be thoroughly and constantly ventilated. All soil or vent pipes, when they pass through the roof, shall be properly flushed with sheet lead, 5 pounds to the square foot, and made water-tight.

No lead waste or vent pipes shall weigh less than the following:

1¼ inch in diameter, 7 lbs. per yard; 1½ inch in diameter, 8 lbs. per yard; 2 inches in diameter, 10½ lbs. per yard; 2½ inches in diameter, 13½ lbs. per yard; 3 inches in diameter, 16½ lbs. per yard; 4 inches in diameter, 24 lbs. per yard.

4. Approved tile pipes may be used underground. Tile pipe in underground drainage shall be of the best material and workmanship and free from all blisters, cracks, flaws or defects of any description. All junctions shall be curved. No right angle joint junctions will be allowed. All joints shall be put together with the best Portland cement, properly mixed and tempered, and finished flush with the edge of the pipe. The joints on the inside of the pipes to be in all cases properly cleaned and finished so as to be perfectly free from all burrs. Drains shall have a fall of not less than one-quarter of an inch to the foot.

5. A properly constructed trap of the same size as the pipe that is being used shall be installed near the outside of the entrance wall or immediately inside the wall. A conductor pipe of not less than three inches shall be connected with the soil pipe inside of the house trap, and shall be carried to the eavetrough.

6. Each house or building shall have its own separate soil pipe and drain, and such soil pipe or drain shall be so placed as to enable it to be readily inspected without destruction to walls, and the plumbing contractor shall be responsible for proper connection of his work with the system of drainage, which connections shall be made by a cast iron bend and three feet of pipe extending horizontally from the vertical soil pipe. No two or more houses or buildings shall have any drain in common until such separate drain shall have passed outside the walls of the house or building which it serves. Where buildings are constructed flush with the line of the street two buildings may be connected with one six-inch pipe or large street drain with a "Y" junction placed immediately in front of wall providing an archway is thrown over to protect both drain and wall of building. All drains shall be properly connected with the private drain and not covered until inspected. Where the tile and iron pipe are of the same size, the iron pipe shall be connected to the tile drain with an enlarged tapered pipe. The plumbing contractor who is to do the plumbing work shall provide a three foot length of iron pipe, properly connected with a bend for the sewer contractor, so that he may make the connection with the soil pipe for the Inspector to apply the water test.

7. The Inspector shall require a water test of all private drains to the outside of the wall where the pipe enters or immediately inside the wall, which test shall be made by and at the expense of the owner of the premises where the drains are constructed. If the work is not found satisfactory after being tested, two days' notice shall be given to perfect the same, and if the work is not made satisfactory within the time allowed, the Inspector may order the work to cease until the requirements are complied with.

8. Every connection between lead and iron pipes shall be made with brass thimbles or ferrules having properly wiped joints, and the ferrules shall be properly gasketed, leaded and caulked into the said pipe. Ferrules for 4-inch pipe shall not weigh less than 2½ lbs., for 3 inch not less than 1¾ lbs., and for 2 inch not less than 1½ lbs. Each ferrule not to be less than 4 inches in length.

9. The minimum diameter of a soil pipe permitted is four inches. All joints in the east iron pipes shall be so caulked with oakum and lead, as to make them impermeable to gas before they are connected. They shall be thoroughly coated inside and outside with coal tar pitch applied hot, or some other equivalent substance. No pipes shall be allowed that are of less weight than what is known as the medium weight of pipe, weighing 45 pounds for each 5 feet of 4-inch pipe, except above the highest fixture, where standard pipe weighing 30 pounds for each 5 feet of 4 inch pipe may be used; or if iron pipe is used in the ground for said soil pipe, the pipe shall be of what is known as the heavy weight of pipe, weighing 60 pounds for each 5 feet of 4 inch pipe.

10. Water pipes shall be of lead, brass, copper, or galvanized iron, and lead pipe shall not weigh less than the following: ⅜ inch, 4 lbs. to the lineal foot; ½ inch, 6 lbs. to the lineal foot; ⅝ inch, 8 lbs. to the lineal foot; ¾ inch, 10 lbs. to the lineal foot; 1 inch, 13 lbs. to the lineal foot.

11. All joints in lead pipe or between lead and brass pipes shall be what is known as wiped joints; no water or waste pipes to be placed in outside walls where there is danger of freezing.

12. Every water closet, sink, bath, and every wash basin, urinal, combination sink and wash tray or set of wash trays, shall be separately and effectively trapped with traps of improved design. In no case shall the waste from bath tubs or other fixtures be connected with a water closet trap, or with a water closet lead bend. Where fixtures are more than six feet from the soil pipe they shall be separately ventilated by a vent pipe, but this shall not apply to kitchen sinks.

13. Where wash basins or other fixtures are placed in bed or living rooms, the waste pipe shall be properly ventilated by a pipe not less than one inch and one-quarter in diameter, to be connected with the soil pipe or carried two feet above the roof.

14. Water closets shall be of an approved design and supplied with flush tank with self-closing valves or cocks No pan closets shall be allowed, or any other style of closet not approved of by the Building and Plumbing Inspector.

15. No plumbing fixtures shall be installed unless a permit has first been obtained from the Building and Plumbing Inspector.

NEED OF AIR CHAMBERS.

Editor Plumber and Steamfitter,—One of my customers complains that every time a faucet is shut down quickly there is a terrible banging noise which goes through the whole house. This is very unpleasant and I would like to know just how to make it right.

Owen Sound, July 6. S. G. D.

Probably on the last connection you will find an "ell." If it is in the barn as you state the chances are that the faucet is made into the ell. Remove the ell and put a "tee" in its place. Now into the open (or part of the tee that looks up) you may place a piece of pipe about one or two feet long and cap the same. This extra piece of pipe will act as an air cushion and you will then notice that the banging you speak of has quit.—D. C. H.

WHAT CAUSES THE NOISE?

Editor Plumber and Steamfitter,—I have a job to fix and have been looking it over a couple of times and can not locate the difficulty. There is a constant singing noise and when you open any of the faucets, the noise seems to cease. Can you suggest anything?

Belleville, July 9. F. O. H.

We would advise you to get a key and go out in the street and close the curb cock, after having tried the same experiment with the stop cock at the cellar wall first. Now when you have closed the stop and waste, if the noise continues, and then if it stops when you have closed the curb cock you are pretty sure of a leak somewhere between the house and the curb. If neither of these experiments are successful, the leak would probably be found between the curb cock and the corporation cock. You ought to be able to tell the sound of a small leak so as to distinguish it from the other noise sounds that sometimes happen in pipes. Be sure that you are right before you go and do a lot of digging.—D. C. H.

PET COCK AND AIR VALVE.

Editor Plumber and Steamfitter,—Will you be kind enough to tell me why it is that when one puts a common pet cock on a radiator that the water will be drawn to the radiator? You take and put an automatic air valve on the same radiator and then no water at all comes. Please explain.

Winnipeg, July 4. O. P. D.

TRADE PROBLEMS ANSWERED.

Inquiries Solicited From Readers, Who Run Across Problems Which are Unusual—Just as You are Interested in Reading the Questions Asked by Another Man in Your Trade, so Will the Other Fellow be Interested in Your Problems—Send the Queries Along and We'll Answer Them—or try to.

Our reader is slightly mistaken. The water is not drawn to the radiator in a first-class working job, but the steam is forced into the radiator and becomes condensed into water. Now in the case of the pet cock if the pressure happens to be a quarter of a pound, more or less and the pet cock is opened the condensation will blow out because there is nothing to stop it. The automatic air valve generally has in it a float which will raise and prevent the condensation from escaping, but just the same it lets the air escape and is supposed to close down at the arrival if the steam.—D. C. H.

NEW APPRENTICESHIP RULES.

Boston master plumbers are now working under a new agreement relative to the apprenticeship question. The agreement went into effect on May 1, a copy of which follows:

Articles of agreements between Master Plumbers of Boston, and the Journeymen Plumbers' Union, No. 12, of the United Association.

Section 1.—It is hereby agreed that the present system of using helpers to assist journeymen plumbers, be abandoned, and in its place adopt an apprenticeship system subject to the following conditions:

Section 2.—One apprentice shall be allowed to a shop, unrestricted, and an additional apprentice for every four men regularly employed—the basis of apportionment shall be computed by the average employment of journeymen for the past year, and in no case shall there be more than four apprentices to a shop.

Section 3.—Each shop shall be allowed its full quota from the boys it now has in its employ, and the boys shall be given credit for not less than six months in each year that he has worked as a helper.

Section 4.—After the first registration of apprentices no employer shall be entitled to register an apprentice over 18 years of age.

Section 5.—All the apprentices shall serve as an assistant for the first three years, at the commencement of the fourth year he shall be given a kit of tools and permitted to work under the instructions of a journeymen until the end of the fifth year, when he shall be known as a junior—it is expressly understood, that a junior may be permitted to work for fifty cents per day less than the prevailing rate of journeyman's pay between the fifth and seventh year, providing that he holds his employment with the same employer, with whom he has served his apprenticeship, but in no cases will his employer be permitted to sign an agreement or an indenture with the said apprentice for a period covering more than five years—and further that the said apprentice may become a member of the Journeymen's Association at the expiration of the fifth year.

Section 6.—All journeymen shall use their best endeavors to instruct all apprentices in the knowledge and science of plumbing.

Section 7.—There shall be a Joint Apprenticeship Committee composed of seven master plumbers and seven journeymen from Local Union, No. 12, who shall keep a correct registration of all apprentices and shall act as grievance committee—to settle all disputes that may arise pertaining to the apprenticeship question.

Section 8.—Any discharged apprentice may present his grievance in writing to the apprenticeship committee, who shall render a decision whether he has been discharged for good and sufficient reasons.

Section 9.—No master plumber shall employ a boy who has been an apprentice to another master plumber, unless the boy can show a proper discharge and recommendation from his last employer—or a recommendation from the apprenticeship committee.

Section 10.—These articles of agreement shall take effect May the 1st, 1910, and hold for one year—either of the parties to this agreement wishing to alter or amend the same shall be required to give thirty days' notice prior to May 1, 1911.

Gas Stoves and Heaters as a Side Line

Plumbers Can Win the Confidence of the Women Folk by Bringing to Their Attention the Advantages of Gas Ranges and Water Heaters—Samples of Advertisements — Which is Calculated to Bring the Greatest Results?

The plumber who has developed his business to a point where he has several men employed finds the bookkeeping and other business of his office increasing to a point which calls for assistance. His shop display has to be neglected, and estimates on contract work have to be done hurriedly with constant danger of making errors.

Assistance being found necessary, it will probably be found more profitable to employ a good man, who can do the office work and assist in the estimating, instead of hiring cheap help, which is likely to merely add to the burden of responsibility already being carried. A good man, too, can oversee the shop display and attend to customers and, by so doing, increase his usefulness and earning capacity.

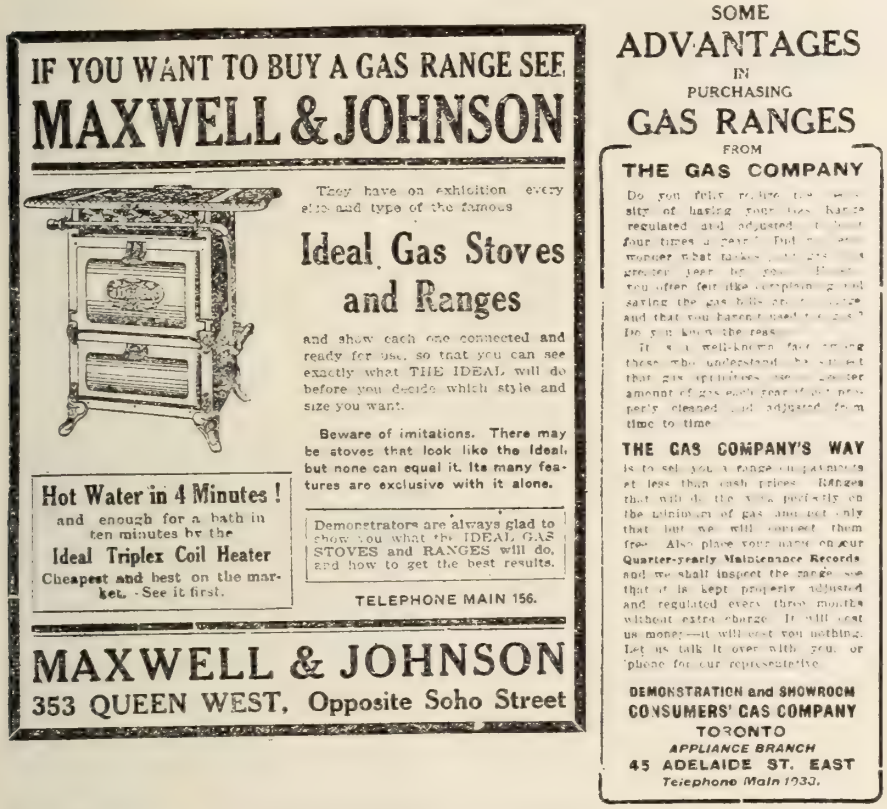
The district and the local competition has much to do with it, of course, but in the majority of cases it will pay a plumber to give up part of his shop display to a showing of gas ranges. There are more customers for gas ranges than for plumbing fixtures, and a better display can be made for less money. A "model kitchen" in the window, and a "model bathroom" inside the shop, together with a few additional samples of gas plates, ranges, heaters and lighting fixtures would round off a complete display and change the "shop" into a real place of business.

Maxwell & Johnson, 353 Queen street west, Toronto, about three years ago took the agency for "Ideal" gas ranges and have been very enterprising in pushing their sale. Over their front door, in the place occupied by the fanlight, they boxed in the space with glass, and show a gas range and light this up at night. They also feature gas stoves and domestic water heaters in their windows and inside probably a dozen gas ranges, etc., are shown, some being connected up for demonstration purposes. Last year about 100 water heaters were sold, and nearly as many ranges. So far this season 76 heaters have been sold, but owing to the competition of the Consumers Gas Co., who went into the retail business this spring, the sale of ranges is slightly behind last year. Maxwell & Johnson, as will be seen by the illustration, are enterprising advertisers and use their space intelligently. Their offer to demonstrate and their "hot water in four minutes" are good features.

The Consumers Gas Co., of course, have an inside track on the sale of gas ranges and fixtures, though the average buyer is naturally suspicious that the Gas Company will sell goods which will burn as much gas as possible. Their offer to install and regulate the fixtures every three months, however, attracts customers. Their advertisements are attractive and convincing and contain features which other dealers in gas goods can copy to advantage.

An ad. such as written by T. A. Cowan, is funny, no doubt, but Mr. Cowan is not in business for fun. He is there to sell goods, and he will never make enough to buy the baby a pair of new shoes out of the goods sold as a result of this ad. In his big 3-column ad. he merely says he has a large stock of "gas goods" and his "prices are right." Compare the Maxwell & Johnson and Consumers Gas Co. ads. with Mr. Cowan's and it won't be hard to decide which will bring the most results. Get value for the money you pay the printer.

A plumber who is tactful and does good work will win the confidence and friendship of customers to such an extent that he will be able to take prospective buyers into the kitchens of satisfied customers, where he has made installations, which both he and the customer are proud of. In this way the display in the shop can be backed up and


IF YOU WANT TO BUY A GAS RANGE SEE
MAXWELL & JOHNSON
They have on exhibition every size and type of the famous
Ideal Gas Stoves and Ranges
and show each one connected and ready for use, so that you can see exactly what THE IDEAL will do before you decide which style and size you want.
Beware of imitations. There may be stoves that look like the Ideal, but none can equal it. Its many features are exclusive with it alone.
Hot Water in 4 Minutes!
and enough for a bath in ten minutes by the
Ideal Triplex Coil Heater
Cheapest and best on the market. See it first.
Demonstrators are always glad to show you what the IDEAL GAS STOVES and RANGES will do, and how to get the best results.
TELEPHONE MAIN 156.
MAXWELL & JOHNSON
353 QUEEN WEST, Opposite Soho Street

FOR SALE
Fine Watch Dog, will eat anything. Very fond of Children
THE ABOVE is ONLY ONE of our side lines. We also carry the largest stock of GAS GOODS in the City, and our PRICES ARE RIGHT.
Plumbing
Heating
T. A. COWAN
"THE LIGHT STORE"
71 Colborne St.
Both 'Phones 318

Samples of Ads Featuring Gas Goods.

sales made by the ability to quote the names, and show the kitchens where necessary, of some of the best known and most popular women in the neighborhood.

The plumber can lead the thought of the community as to what is best in kitchen equipment if he goes about it intelligently. With a gas stove in the kitchen, there is no dirt or ashes to clean up, and with the range boiler connected up to the furnace, and fitted with a hot water heater, the housewife has all that she can desire.

Good work in fitting up the kitchen is the best advertisement a plumber can have for repair work, and in these days repair work is more profitable than the undertaking of contracts. But, as pointed out in the beginning of the article, the sale of gas goods can be undertaken as a side line by the office man, while the "boss" looks after the securing and completion of contract work.

Gossip of the Plumbing and Heating Trade

Items Gathered in all Parts of Canada—Letters Invited From Subscribers, Giving Particulars Regarding Changes in Firm Names, Contracts Secured, Novel Methods of Advertising or Other News—Photos of Anyone or Anything Connected With the Trade Also Welcomed.

Lewis Legrow, master plumber, Toronto, is spending the summer at his summer cottage at Lorne Park.

Vanier & Vigeant, plumbers, Montreal, have dissolved, and Prevost & Vigeant have been registered to succeed them.

Chas. Schwabe, plumber, Ottawa, has taken his brother into partnership with him. The firm will be known as Schwabe Bros.

The contract for the improvements to the plumbing at the South Park school, Victoria, B.C., was awarded to Colbert & Co., at $1,827.

J. J. Cain, Alliston, has the contract for the plumbing, heating and iron work on the new Home Bank building now in the course of erection there.

The Garth Co., the well known Montreal plumbing supply house have changed their west side quarters to handsomely fitted up premises at 558 St. Catherine St. W.

Alex. MacKay & Co., plumbers, Montreal, have dissolved. The business will be continued by Alex MacKay personally. He has registered under his own name.

Fred E. Ellis, salesman for the Gurney-Tilden Company in Western Ontario, is spending a couple of weeks drinking milk and swimming at a farm house near [illegible] Lake.

Francis I. Lessard, Montreal, has assigned for the benefit of his creditors. His liabilities are $9,800 the main creditors being the Star Iron Co. and the E. Cavanagh Co.

John Taylor, at one time in charge of the electrical work of the John Ritchie Co., Toronto, died on July 13, as a result of an elevator accident in which his leg was cut off.

The Toronto Board of Control this week awarded contracts in connection with East Toronto's new $25,000 firehall as follows: heating, W. Schulkins, $1,300; plumbing, J. E. Gray, $745; and electric wiring, W. J. McGuire. $330.

Phillips & Co., Orillia, are installing plumbing in the Tudhope Motor Co.'s new factory, steam-heating in the new Hotel Gladstone, Orillia, and plumbing, hot water heating and galvanized iron work in the new Carnegie Library, Orillia.

While at work in the cellar of a house in Montreal, Henri Remillard, 19 years of age, was overcome by gas and died before assistance arrived. He was trying to connect the gas pipe of the house to the main. There was a boy working with him, but the latter had been sent away on an errand.

The J. L. Mott Co. have opened their fine new premises at 138 to 140 Bleury St., Montreal, where W. J. Wall, their capable representative will meet the trade as formerly. The "Mott Company, Ltd.," received letters of incorporation at Ottawa, on July 8 to manufacture and deal in hardware, iron and porcelain enamelled ware, sanitary earthware and plumbing fixtures and supplies. The capital stock is to be $100,000. The incorporators are G. W. MacDougall, K.C., L. Macfarlane and E. J. Waterson, Montreal.

TORONTO PLUMBERS' OUTING.

An enjoyable outing of the Toronto plumbing trade was held on Saturday afternoon, July 9, at Dufferin Driving Park. Between 150 and 200 master plumbers, supply men and travelers were present.

The event of the day was a much-heralded baseball match between the master plumbers and the travelers. The former won in a seven-innings game by the close margin of 14 to 13; the errors were not counted. Dan Glynn, Jr., and F. Smith pitched for the plumbers, while Geo. Abbot was backstop. The travelers pitchers were Frank Webb and Hugh McAlpin, both of the James Robertson Co., with J. Creller as catcher. The other players were: Master plumbers: Chas. Hicks, E. T. Needham, R. E. McKay, Wm. Shultze, P. J. Hayes, R. Stevenson, Geo. Cooper, E. Philips, H. Pepper, Harry Hicks and Bob Shannon; travelers and supply men: Ed. Brewer, Dominion Radiator Co.; Jno. Taylor, F. Quinn and E. Quinn, Taylor-Forbes; Geo. Kingswood, Standard Sanitary; and J. Donnelly. Joe Bell of the King Radiator Co., coached the travelers, while G. F. Franklin looked after the master plumbers. Inspector Billy Coppin was umpire, assisted by D. McMullen. S. J. Wheatley was scorer.

So successful was the outing that it is proposed to hold similar gatherings in one or other of the city parks probably every fortnight during the rest of the summer.

SMOOTH STRANGER POSES AS AGENT.

The following despatch sent out from Sarnia, Ont., speaks for itself:

Sarnia, June 24.—W. J. Robson, representing the MacLean Publishing Company, of Toronto, is in town to-day. He found on making his calls, that a man, giving the name of W. Hill, had made the rounds the day before yesterday and passed himself as agent for different trade journals.

He called at W. J. Barries' plumbing shop.

"Let me see, I believe you owe a small account to the MacLean Publishing Company."

"No, I do not," said Mr. Barrie, and then explained his standing. The smooth one then collected a year's subscription from Mr. Barrie in advance.

Mr. Hill had all the trade journals in his possession and did a land office business.

Mr. Robson said that the matter will at once be placed in the authorities' hands, and if possible the offender will be apprehended.

[Editorial Note.] — Only the bona-fide subscription representatives of the MacLean trade papers carry receipt and renewal blanks made out in the company's name. No order should be given to or renewal placed with any person who does not have the company's regular blanks.

MARRIED AT KEWANEE.

C. C. Macdonald, of Macdonald & Sons, pipe fitters' tools, Toronto, made a business trip to Kewanee, Ill., last week, the business in hand being to complete the most important contract ever undertaken by him, Mayor McLean, of the city made famous by its manufacture of boilers and pneumatic water systems, consenting to the completion of the arrangements for the marriage of his daughter Barbara, to the irrepressible C. C., who has a reputation for landing any contract he goes after.

Mr. Macdonald, some years ago was assistant superintendent of the Kewanee Boiler Company's works, and it was then that he met the lady who is to spend his money in future. It is understood that she began early in spending the coin by bringing along a trunk full

C. C. MACDONALD, Toronto.

of love letters written by C. C. during the past five years, excess baggage having to be paid on the shipment. A. L. Macdonald, also of Macdonald & Sons, went along with his brother and acted as best man.

An amusing incident happened during the honeymoon. One day the happy couple were out picking flowers in the woods not far from the river and, as it happened, quite close to a popular bathing hole for the boys of the district. A number of boys were hanging around and finally one approached C. C. and said:

"Is that your girl over there?"

"Yes, I suppose so," replied C. C.

"Well, tell her to go home," said he, "Us fellers wants to go in swimmin'."

C. C. repeated the odd request; but Mrs. Macdonald had not yet finished her bouquet, and she said, with a laugh, to tell the boys she would not look. She'd shut her eyes.

This they were duly told, and they consulted gravely on it. Then the spokesman returned to C. C. and said:

"The fellers says they dassent trust her."

MERIT BRINGS ITS REWARD.

A Montreal plumber gives a good illustration of the value of paying the fullest attention to the smallest job. Some time back he received a telephone call to look after a small repair that promised, and proved to be more troublesome than remunerative. But he makes it a rule always to do his best in every job, so he gave his personal attention to the matter, and then when through forgot all about the incident in other work.

But evidently the customer was very pleased at the care taken by the plumber, because some months afterwards the latter received instructions to install a complete system of sanitation and heating into a house that the customer had bought in the country, besides putting the roof in complete repair. The work took some time, and amounted to a very respectable figure. There was no attempt to peddle the contract, and no beating down of the plumber's estimate.

"As a matter of fact," said the plumber in conclusion, "I had so established confidence in the landlord by my previous work that he left everything to me. I look upon this as a great proof of the value of being attentive and of doing one's best in little as well as in big jobs."

QUITE A VARIATION.

An indication of how prices of plumbing work vary in Toronto is given by a job on which R. J. Shannon, 1233 Queen street, west, was recently asked to tender for the West End Christian Temperance Society. He quoted $195 for the work and being told to include five additional gas lights he made his tender an even $200. When the tenders were opened they were found to be as follows: $200, $172, $170, $155, $145 and $135, the job being given to the lowest tenderer.

PICNIC AT NIAGARA.

About 300 employees, and members of their families, of The Jas. Morrison Mfg. Co., Toronto, held their 22nd annual excursion and games at Victoria Park, Niagara Falls, on Saturday, July 9. The day was bright and the outing was thoroughly enjoyed. The card of ten events was carried out without a hitch. Probably the most interesting race was that for old employees, those with 20 years service. Thirteen were eligible, but only five started. R. Philip was the winner. The prize was an engraved gold locket. This feature will be an annual event for the future. All the other prizes were in cash.

The committee in charge were all employees of the firm, with R. A. Morrison, chairman, and Jas. E. Fiddes, secretary-treasurer.

APPOINTED CANADIAN AGENT.

Frank T. Rawley, who gained a host of friends while with the Montreal branch of the Dominion Radiator Company, has been appointed Canadian manager for the Honeywell Heating Specialty Company, Wasbash, Ind. Not only has Mr. Rawley had a long and

FRANK T. RAWLEY, Montreal.
Appointed Canadian Manager
of Honeywell Heating Co.

varied experience on the road, but he has the somewhat unique advantage of a thorough practical experience, being a trained mechanic. He can therefore give valuable advice on heating instalations. Added to this Mr. Rawley is a fluent French speaker, and is thus well qualified for this country of the two languages. The offices of the company will be in the Eastern Townships Bank building, Montreal. Everyone will wish genial Frank the best of success in his new sphere of work.

New Buildings, Water and Sewerage Systems

Opportunities Offered by Municipalities and Private Enterprise for New Plumbing, Heating, Ventilating or Sanitary Systems—Work Being Undertaken in Every Section of the Dominion.

Municipal Undertakings.

A new waterworks system will be installed shortly at St. Boniface, Man.

Tenders are being called by Yorkton, Sask., for the construction of sewage disposal works and sewers.

The John Galt Engineering Co. have charge of the installation of the waterworks system at Stettler, Alta.

The Dominion government has granted $20,000 towards the instalation of a sewerage system at Stewart, B.C.

The contract for supply of sewer pipe and junctions for Winnipeg has been awarded to W. F. Lee, Winnipeg, for $20,120.25.

Macdougall & Co., of Vancouver, have been awarded a contract for the construction of $50,000 worth of sewers at Nanaimo, B.C.

The contract for the sewer and water extensions at Strathcona, Alta., for this year wgs given to Hulbert & Wilson at $13,847.95.

A. Leofred, C.E., has closed a contract with the Chaudiere Curve, Que., town council for a waterworks plant to cost when completed, $250,000.

Tenders address to G. R. Geary, chairman Toronto Board of Control, will be received until July 26, for construction of section No. 6, high level intercepting sewer.

St. John City Council have awarded the contract for supplying 314 tons of cast iron pipe to the Stavely Coal & Iron Co., Chesterfield, Derbyshire Eng. Their bid was as follows: 12-inch pipe, $27.15; 10-inch, $27.30; 8-inch, $28.10; 6-inch $28.60. Others tenderers were: Cambden Iron Works, Singleton, Dunn & Co., Watson Jack & Co., D. Y. Stewart & Co., Stanton Iron Works, United States Cast Iron Pipe & Foundry Co., Vroom & Arnold, T. McAvity & Sons, and W. H. Thorne & Co.

Public Buildings.

The public school at Renfrew will be remodelled.

The G. T. R. Railway Co. intends building a large hotel at Vancouver.

Extensive alterations will be made to the Alexandra Hospital at Rosthern, Sask.

A new poultry building to cost $36,000 will be erected at the Toronto Exhibition.

The Princeton, B.C., hospital board have decided to call for tenders for their new hospital.

It is stated that J. H. Rudy is preparing plans for the new theatre at Edmonton which will cost about $70,000.

Plans for the post office enlargement at Goderich have been prepared and tenders will likely be called for in a

The following by-laws were carried at Edmonton: $175,000 for new public hospital, $75,000 for exhibition grounds, $25,000 for library site.

Tenders addressed to J. R. Campbell, secretary Eganville, Ont., Public School Board, will be received until July 15. for the erection of an 8-room school.

Tenders addressed to R. C. Desrochers, assistant secretary, Department of Public Works, Ottawa, will be received until July 13 for the construction of post office, at Elora, Ont

The contracts for the new Separate school, Brantford, were awarded as follows: Building and construction, J. C. O'Neil, $15,900; heating and plumbing, Howie & Feely, $3,880; electric wiring, Lyons Electric Co., $185.

General Building.

The Traders Bank will erect a new building at Vars, Ont.

The Standard Bank will build two new branches at Toronto to cost $17,500.

The Bank of Commerce will build a new office building at Fort William to cost $60,000.

George Marcil, ex-mayor af Notre Dame de Grace, Que., will build a $25,000 residence at that place.

J. H. Pollock will erect a $30,000 block at Winnipeg, which will be used for a billiard room, bowling alleys and baths.

Recent building permits issued at Vancouver, include: S. A. Stuart, dwelling, $6,000; J. Z. Hall, dwelling, $8,000; B. T. Rogers, addition to dwelling, $10,000; Adamson & Main, building, $35,000.

Recent building permits issued at Toronto, include: J. J. McCaffery, addition to hotel, $10,000; J. L. Havill, warehouse, $16,000; Star Publishing Co., addition to printing office, $13,000; G. Brady & Son, 3 dwellings, $18,000; John Boyd, dwellings, $10,000; W. H. Carrick, dwelling, $18,000; H. Wright 2 dwellings, $10,000.

Recent building permits issued at Winnipeg include: Dunn and Wallace, dwelling, $5,000; A. C. Galbraith, ten houses, $25,000; D. R. Williams, two dwellings, $7,000; T. Ferguson, four dwellings, $10,000; J. Leslie, house, $5,000; J. Christie, two houses, $6,000; Mrs. C. Gerrie, $12,000 residence; Superior Fuel & Coal Co., $10,000; Winnipeg Canoe Club boat house, $5,250; Forseng and Monsom, dwelling, $5,000; B. Skipworth, dwelling, $6,600; C. Guarino, two houses, $5,750; T. Wilson, two houses, $9,000; G. H. LaPlante, two houses, $6,500.

SAFE GASOLINE TANKS.

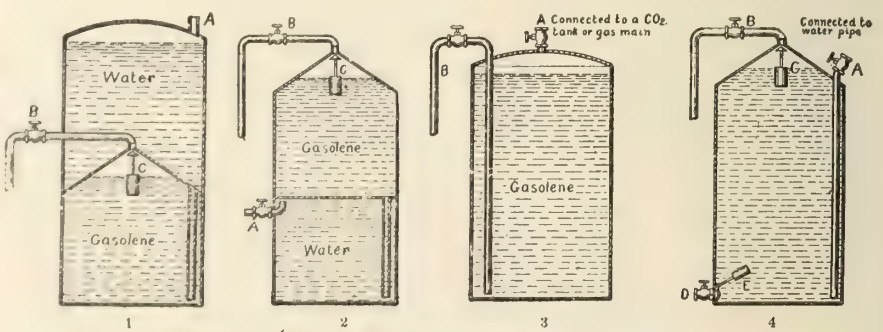
As gasoline explosions are due to a mixture of gasoline vapor with air (accidentally ignited, of course), I think the air in a gasoline tank could well be replaced either by water or a non-oxidizing gas such as carbon dioxide, after the manner here illustrated.

In the first two designs, water is used In Fig. 1 the weight of the water forces the gasoline out of the lower tank through the stopcock B. The valve C is so constructed that it floats when the water reaches it, closes the opening, and thus prevents the water from flowing out. To refill the tank with gasoline, a suction pump is connected to the stopcock A and the gasoline is siphoned into the lower compartment through the stop-cock B. The latter prevents the gasoline from escaping.

Fig. 2 is practically the same, but to discharge the gasoline through the stopcock B air must be pumped into the the lower part to force the water into the gasoline tank above. To refill this tank with gasoline, the stopcock at A is opened, letting the air out, and the weight of the water then siphons the gasoline into the tank above through the valve, and stopcock B.

In Fig. 3 a carbon dioxide tank is connected to the pipe A and the pressure of the gas then forces the gasoline out through the pipe B.

In Fig. 4 the stopcock A is connected to the water main or pipe when the pressure of the water forces the gasoline out through the stopcock B. The valve C prevents the water from escaping into the gasoline cans through the stopcock B. To refill the tank, the stopcock A is closed and stopcock D is opened, and the water flowing out through the latter will draw the gasoline into the tank through stopcock B. The valve E is adjusted to sink in gasoline and thus close the outlet, preventing escape of gasoline through the stopcock D.—F. W. Bremar, in Scientific American.



SIMPLE METHODS OF MAKING GASOLINE TANKS SAFE.

PLUMBING AND HEATING MARKETS

MONTREAL.

July 14.—The markets keep steady and unchanged and with the exception of the slashing by one boiler and radiator maker the market is undisturbed. Supply houses report excellent trade in all lines especially from outside points. The demand on soil pipe continues exceedingly heavy and a shortage is more than likely later on.

Trouble between the local contractors and the bricklayers and stonemasons has arisen, but little interruption to work is anticipated, and there should be no set back in building. The tone all the way round is very bright. Trade is good, while the prospects for the fall look more cheerful than ever. Plumbers are busy, and the whole condition of the industry is very healthy.

Soil Pipe.—The heavy demand for soil pipe continues, and makers have all they can do to supply the call. A shortage is expected later on, and it would be well for users to try and accumulate some stocks ahead. The market is firm and we quote light 60 off, heavy 70 and 10.

Lead Pipe.—Lead pipe, in common with other lines, is in good demand. Beyond this there is little feature to the market. We quote: Pipe and waste at 30 off; traps and bends, 50; calking lead, 5c per lb.

Solder.—The improved buying noted last issue continues. Roofers are active and all the way round solder is being used very considerably. Prices are unchanged, and we quote half and half 20c wiping 18½c.

Iron Pipe.—The stiffening in the market has stimulated the demand, and there is a growing desire to carry heavier stocks in view of a further advance. We quote: ¼-in. black, 63; galvanized, 48; ⅜-in. black, 59; galvanized, 44; ½-in. black, 69; galvanized, 59; ¾ to 4-in. black, 71½; galvanized, 61½.

Radiators and Boilers.—But for the continuance of the cut in prices by one manufacturer, the market is very steady and well maintained. Orders are reported as being heavy, and factories are working at full pressure to supply the demand. We quote: Steam boilers, 60 and 5; hot water boilers, 50 and 10; wall and hot water radiators, 50 and 7½; steam radiators, 50 and 7½ per cent.

Scrap Metal.—The market is quiet with prices unchanged. We quote: Heavy copper wire, 11½c; light copper bottoms, 10c; heavy red brass, 10c; heavy yellow brass, 8c; light brass, 6¼c; tea lead, 2½c; heavy lead, 2¾c; scrap zinc, 3c; cast iron, $16.

Metals.—Copper is very weak, and prices have been cut ¼c. The other metals are unchanged. We quote: Tin, 35c; copper, 13½c; imported lead, $3.75; domestic lead, $3.60.

TORONTO.

July 14.—Except for an advance of a cent on the list price of lead waste, not a change is reported in plumbing or heating goods this week. The tendency is toward firmer conditions and the state of the market is at present satisfactory.

All lines are feeling an impetus. Enamelware is moving splendidly and a second season seems to have opened for soil pipe and roughing-in materials.

The situation in regard to heating goods is improving with the advancing season and the consequent better demand. Brass goods are now in a splendid position, supplies being barely adequate to meet demands.

Locally the master plumbers are unusually busy. A great number of the city schools and some of the public buildings and institutions are being overhauled and the sanitary arrangements remodelled. There is plenty of new work, too, and building permits during the hot weather are just as numerous as during the spring and early summer.

Enamelware.—Conditions are about the same as at last issue. Demand is brisk and the market price steady. Orders while not so large as some received earlier are entirely satisfactory. The holidays season sometimes sees an easing off, but with the staffs at present at work there is plenty to do for all hands. Prices are unchanged.

Soil Pipe.—Another demand has sprung up, which has brought about a reduction of stocks in the hands of supply men. There is a lot of new work starting. Prices are steady,—unchanged from last issue. Light pipe is 60 and 10 off; medium and heavy, 70 and 10, and 7 and 8-inch pipe, 50 p.c. Fittings are still at 70 and 10.

Iron Pipe and Fittings.—Rumor has it that there may be higher prices for pipe shortly. There is a good demand for pipe of the smaller sizes, though stocks of all sorts are pretty large. Quotations are unchanged. Discounts on malleable fittings range from 37½ to 40 p.c., with cast iron fittings from 60 to 65 off. Bushings, standard, are 70, and malleable are 65 p.c. Nipples are 75 and 10; headers, 60, and flanged and malleable-lipped unions, 65 p.c. Galvanized pipe is $6.35 and black pipe $4.70 per hundred feet, 1-inch size.

Lead Pipe.—This line has quieted down again. The price, 30 off, still rules. Traps and bends at 50 off are selling well. Calking lead is firm, though some is selling at 4½c a pound. The list price of lead waste has gone up from 8c to 9c a pound. The same discount rules.

Solder.—There is plenty of solder in stock. Wiping runs from 17c to 19c, and half-and-half from 18½c to 20c. Demand is good.

Brass Goods.—The call for brass goods of all kinds is splendid. Supply is trying hard to keep pace with demand. Manufacturers are running at capacity.

Boilers and Radiators.—Business is increasing with the advancing season. Discounts hold to the old figures. Hot water boilers and radiators are 50 and 10 off, with steam radiators 2½ p.c. better.

Metals.—Copper has declined ½ cent since last issue and is now at $13.25 per hundred. Lead is unchanged at $3.75 (dom.) and $3.80 (imp.) Old metals are also easy. Lead is worth 2½c; zinc, 3½c; copper, 9c (about), and iron ½c.

BEAVER DIE STOCK.

The 25b Beaver Die Stock, made by the Borden Canadian Co., 66 Richmond St. East, Toronto, is for cutting threads on 1 to 2 in. pipe with one set of dies. It is built on the easy working principle on which the Borden Co. lays special emphasis, this principle meaning the employment of narrow dies which recede to form the pipe taper. The idea is that the friction of cutting is reduced by means of the narrow dies, and as they recede or open out in cutting to form the taper thread there is less metal to remove with each succeeding turn, and consequently each turn grows easier, thus enabling one man to cut a 2 inch thread without trouble. The threading of different size pipes is accomplished by shifting a cam, an operation which of course is important as saving the time of changing dies. The stock has a universal chuck, which serves to centre and grip all sizes of pipe by simply shifting a cam, therefore doing away with the pushing and breaking of grip screws. The stock being complete within itself has no loose parts, and there is nothing to tax the memory to see that all parts are always available for use. The Borden Co. emphasizes also the low cost of maintenance, on account of the fact that such parts as may become broken are of small and relatively inexpensive construction. The die is of course one of a line covering all sizes. These are shown in catalogue No. 11, which can be had upon request.

CAST IRON FITTINGS—ALL SIZES

FOR STEAM, GAS, OIL AND WATER — SCREW AND FLANGED

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Reducing Flanged Tee
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For 125 or 250 pounds working pressure.
The only factory in Canada devoted exclusively to Cast Iron Fittings.

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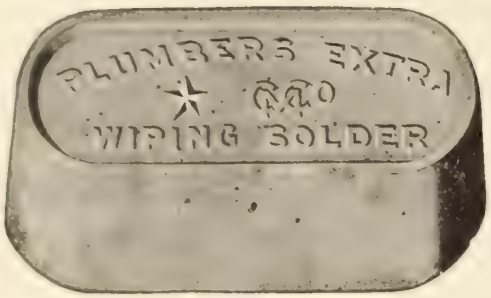

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Manufactured by

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They consist of a composition lead shield and an ordinary wood screw. Write for Catalogue 74 and free samples.

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Catalogue Department 74

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is recognized as the most up-to-date line of Water Heaters on the market.

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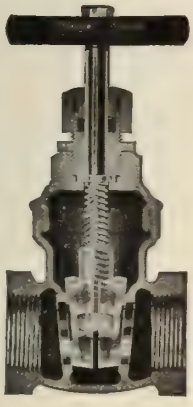

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UNRIVALLED IN DESIGN AND WORKMANSHIP

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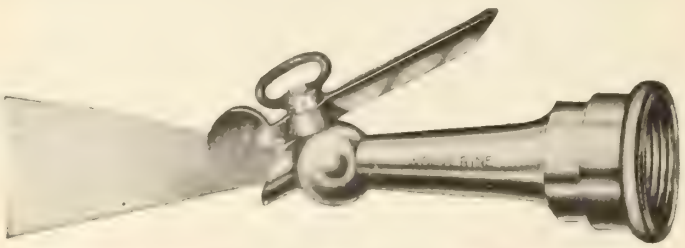

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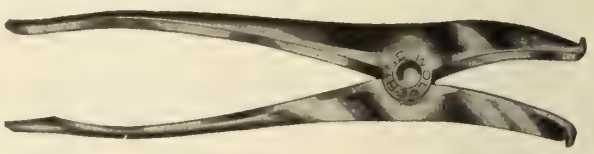
No obstruction in Waterway, or back pressure on hose.



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That's what a shelf bracket's for. For this purpose there can be NOTHING BETTER, NOTHING CHEAPER than the BRADLEY STEEL BRACKET. It is well Japanned, Strong and Light. The saving on freight is a good profit aside from the lower price at which the goods are sold. Order direct or through your jobbers.
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GENUINE
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ARE THE BEST.

Catalogue on request.

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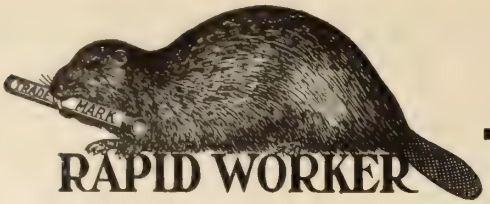


RAPID WORKER

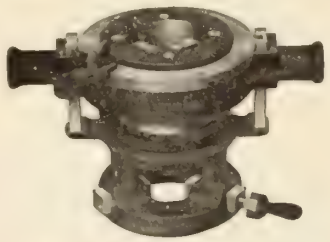
One man with a Beaver Die Stock is worth two or three men with any other Die Stock made.

"Beaver" Adjustable Die Stocks

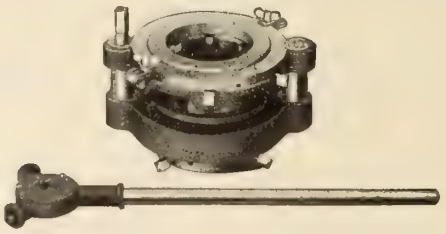
No loose Bushings or loose Dies on these two tool and they cut ¼, ⅜, ½, ¾, 1, 1¼, 1½, 1¾ and 2 inch pipe.

No. 6, threading ¼, ⅜, ½, ¾ inch, comp'ete

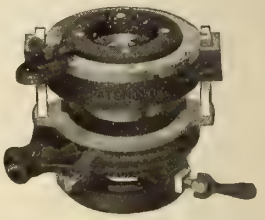
have cut the cost of pipe threading in two because they will thread all sizes of pipe without changing dies. They are built on the receding principle which positively enables one man to thread any size of pipe and produce absolutely tight joints for all work, including hot water. They save the time formerly used up in changing dies and looking after loose parts and eliminate all of thread-stripping when backing off.



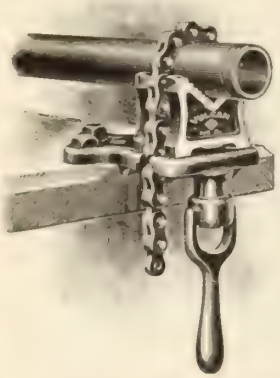
No. 25A. threading 1, 1¼, 1½, 2 inch pipe. A boy can operate it.



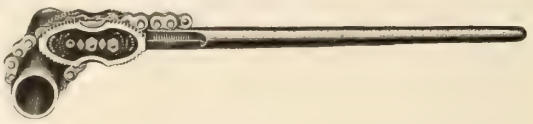
No. 60. Uses two sets of dies. One set cuts 2½, 3, 3½ in.; the other cuts 4, 4½, 5, 6 in.; they are inserted without removing any parts.

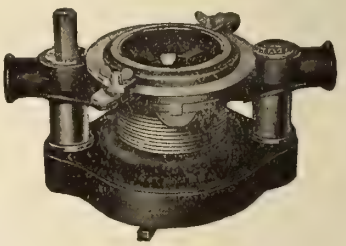


No. 26A. Cuts 1, 1¼, 1½ and 2 in. pipe. A boy can operate this tool.



Pipe Vise. Takes pipe to 4 inch.





No. 41. Cuts 2½, 3, 3½ and 4 inch pipe.

THE WARREN ADJUSTABLE DIE STOCK

With Non-receding Dies.

Made in FOUR Different Sizes.

Each size cutting two sizes of pipe without changing dies.

A strong, durable tool, threading two sizes of pipe without changing dies. Particularly recommended for those who want a Die Stock of just the required size and weight for two sizes of pipe.

NET PRICES TO CONSUMERS:—

No. 120, ¼ in. - ⅜ in.	$5.00.	Extra Dies, cutting two sizes each (also ⅛), Right or Left	$1.50
No. 121, ½ in. - ¾ in.	5.50.	" " " " " Right or Left	1.60
No. 122, 1 in. - 1¼ in.	6.00.	" " " " " " "	2.00
No. 123, 1½ in. - 2 in.	7.00.	" " " " " " "	2.00

Write us for Illustrated Price Lists.

BORDEN CANADIAN COMPANY, 66 Richmond St. East, Toronto, Ontario.

"Scotia"

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WHEN you order plumbing supplies of any description from us you are sure of reliable goods at the closest prices. And as our buying capacity is very large we always carry a complete assortment. We can offer you many advantages in the way of selection, prompt shipment and close prices.

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SCOTIA PLATE A—225

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LIMITED
HALIFAX, - - NOVA SCOTIA

Will You Partner With Us in Radiators?

Recommend and instal the

"SOVEREIGN" RADIATOR

It is made in a large number of designs, and fits handily into any vacant spot in store, office or home.

Your reputation is at stake when you instal a modern heating plant. See that the reflection is all you could desire by installing the "Sovereign" ---the radiator that always makes good!

Send for booklet and particulars.

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Plate F
199

The Standard Ideal Company Ltd.

Dimensions Lavatory 18 x 21" Oval Bowl 11" x 14" Back 8"

We have a large number of other styles including many new designs to select from--For which see our catalogue F now ready for distribution.

We are also manufacturers of full lines of Bath Tubs, Shower Baths, Lavatories, Sinks, Laundry Trays, Wash Sinks, Range Closets, and Urinals, etc., etc.

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is the ONLY satisfactory Self-closing Work for use in Hotels and Public Buildings.
Large numbers in use in Montreal and on the Pacific Coast.
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WOODWORK INCLUDED

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There is no union just as good as a DART

Experience Proves This

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The Name is Cast on Every One

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Vol. IV, No. 6 (New Series). Publication Office : TORONTO, AUGUST 1, 1910. Old Series, Vol. XXII. No. 15

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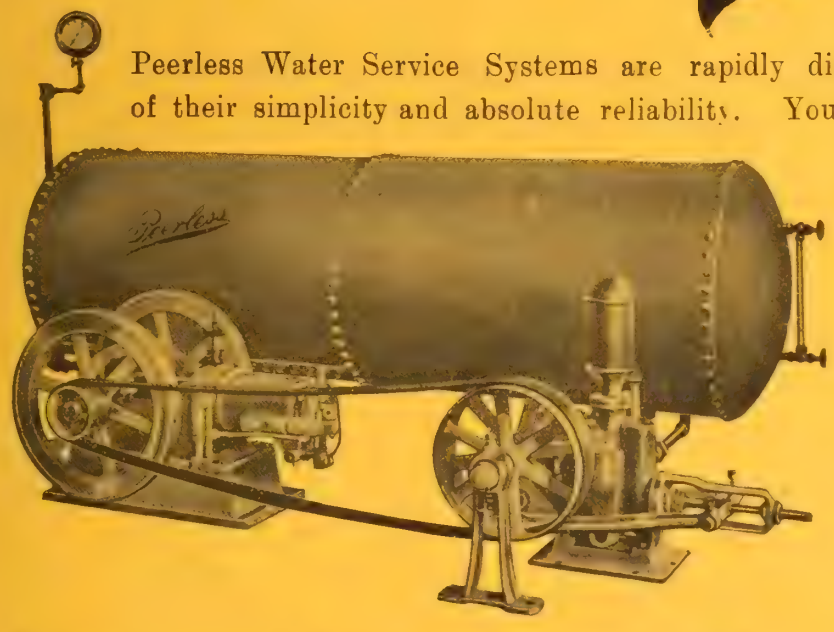
Satisfactory Profits--
Enhanced Reputation-

Peerless WATER SERVICE SYSTEMS



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Famed for its Smoothness, Colour and Wear

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This is one of our leading and best known lines, which has given satisfaction throughout the Dominion. Our new and up-to-date plant is unrivalled for the production of Bath Tubs, Slop Sinks, Kitchen Sinks, Laundry Tubs, Lavatories, Closets, etc. Customers can rely on having their orders promptly filled. Every article of "BEAVER BRAND" manufacture is guaranteed.

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your own interests and those of your customers are fully safeguarded if you handle "Crown" Brand goods. In the manufacture of these goods only the greatest care, highest skill and best materials are employed; they are the 'very last word' in laundry goods. If you are interested, write for prices.

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"Kerr" Radiator Valves
on your heating work, and your valve troubles are over

We charge the price and furnish the reliable goods

The
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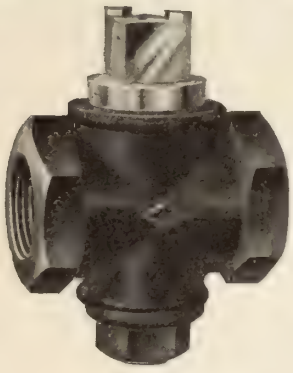
Look for Our Name "KERR" on All Genuine KERR VALVES

STANDARD IRON COCKS



We carry a large stock of Iron Cocks in all sizes from ½-in. to 4-in. inclusive, in the following styles

1—All Iron.
2—Iron with Brass Washer.
3—Iron with Brass Plug.
4—Iron with Brass Plug and Washer.

The *All Iron Cock* should not be used for steam or water, as the plug will stick in the barrel. We recommend the brass plug for steam or water.

All cocks are tested to 175 pounds hydraulic pressure before leaving the factory and are guaranteed against defects.

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PERFECT SYNONYMS

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Over 4,000 Proofs already in Canada. Can we name them for you, or demonstrate it in your own locality? The Honeywell Generator is now being "made in Canada" under Canadian management.

Do you like dollars? Are you interested?

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Reducing in Run or Branch

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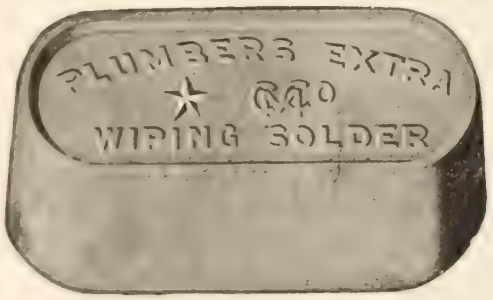
At McGill College, Montreal, our 1¼ inch Screwed Elbow, guaranteed for 125 lbs., broke at 5000 pounds pressure, and our 3 inch Flanged Elbow, guaranteed for 125 pounds, could not be broken, the packing blowing out at 2800 pounds pressure.

Think what this enormous strength means in point of safety. We make ***CAST IRON FITTINGS,*** all sizes, for Steam, Gas, Oil or Water. Write for details.

STANDARD FITTING & VALVE CO., Limited - GUELPH, ONTARIO



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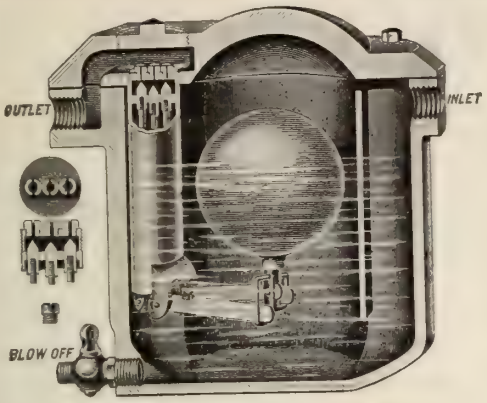

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Ever hear of Hugh Chalmers?

He is the man, who, at the age of 30, was so good a salesman that his firm paid him $75,000 a year.

Anything such a man has to say about salesmanship certainly can be read with entertainment and profit by every salesman in Canada.

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No strings on this.

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All you need do is to write us stating your name, your private address and the name of the house you represent.

We want these particulars simply by way of proof that you are a traveling salesman because we charge non-salesmen 50c. a copy for the pamphlet—and it's well worth it, too! But, remember, it is perfectly FREE to traveling salesmen.

Better write for YOUR copy now.

The MacLean Publishing Co., Ltd.

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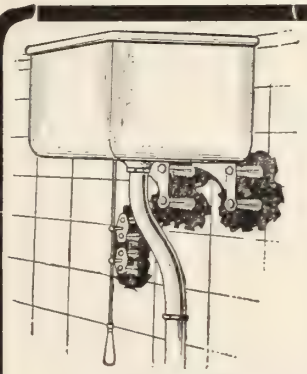

Durability Effectiveness Appearance

are the three most prominent features embodied in STAR EXPANSION BOLTS. For making fastenings to walls of tile or marble they are invaluable. They do away with the old method of using wood plugs or "freezing in." Thousands of plumbers throughout the Dominion use and endorse

Star Expansion Bolts

when working on a job that requires secure and satisfactory fastenings. They're simple and easy to use—just drill hole, insert shield and run bolt through the fixture.

The STAR is made of malleable iron and will fit any lag screw. Write us for catalogue 74, free samples and address of our Canadian Branch.

Star Expansion Bolt Co.

Catalogue Department 74

147-149 Cedar St., NEW YORK CITY

To the Manufacturer or Wholesaler——

If it were possible to employ a traveller who could call on 7,000 of the best dealers all through Canada every week, what salary would you figure he'd be worth—even supposing he did nothing more than go in and shake hands with these dealers, under such circumstances they'd be glad to see him.

Would he be worth $200, $300 or $500 per week? Many a house would pretty nearly let him fix his own salary.

Equip an advertisement in this paper with a verbal handshake for every dealer in Canada, and a frank, brief, pointed talk about your goods and you add a traveller to your staff who will make 7.000 calls a week for you at a salary of $4 to $8 a week—less than you would pay a first-class stenographer.

Of course this traveller won't displace any of your regular salesmen, but he will help them to sell more goods and open up more new accounts.

Plumber and Steamfitter

and Sanitary Engineer of Canada

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Circulating amongst Plumbers, Steam., Hot Water and Gas Fitters, Sanitary Inspectors, Heating and Ventilating Engineers, City Engineers, Boards of Health, Architects, etc.

TORONTO AUGUST 1, 1910

SHOULD PULL TOGETHER.

The plumbers and steamfitters of Canada must rally to the association movement that is going on. "United we stand, divided we fall." How true that is of the present position of the plumbing industry. When accounts are to hand from all sides of absurd price-cutting, when public corporations encourage abuses by accepting tenders that are ridiculously low, even to the lay mind, when shoddy work is fostered by antiquated by-laws and lack of inspection, is it not time that the determined men of this great industry of ours should rise in their might and insist upon reform. How can the status of the plumbing industry be lifted to its proper height, when even the most reputable craftsmen have to bear the odium of the malpractices of the irresponsible and the unqualified. Never was it more essential that great reform should be made in plumbing laws and plumbing practices.

How can this reform be made? Simply and solely by combined effort. No great social reform was ever instituted without the full force of the people behind the movement, no labor demand was ever successful that did not have a solid union to back it up, and so with the plumbing industry to-day. All the complaining in the world will not remove the injustices which now beset the plumber, unless one and all combine and work loyally together. When this is once effected, present troubles, which seem at times almost beyond relief, will be easily swept away.

But first of all the plumbers of Canada must be true to themselves and to the men who are working so patiently and earnestly to weld the industry into a loyal and harmonious whole. Week in and week out for years have the adherents of the Plumbers' National Association of Canada, and of the affiliated local branches endeavored to augment the ranks, and to arouse that enthusiasm for combined effort, which alone can redress the evils. It cannot be said that plumbers generally have adequately seconded those efforts.

This year things look undoubtedly brighter so far as the National Association movement is concerned. The Toronto local association have this year rallied splendidly to the banner of combination, and with the success of the convention in view, are making things move well. It is up to the other provinces to see that these efforts are properly supported. The more delegates there are the more power to the elbows of those who are endeavoring to institute reforms. But beyond this there is the whole prosperity of the plumbing industry concerned. Intermittent effort in asociated work, simply for the purpose of making any one event successful is no good. The work must be continuous.

Rally, therefore, plumbers in the north, south, east and west, not only for the purpose of making this coming convention the best on record, but for the starting of a fresh life in associated work. Solid combination from the Pacific to the Atlantic can alone sweep away the abuses that now spoil one of the finest industries of the country. It is no use for one man to sit pat, and to expect his neighbor to have the influence and the will power to effect reforms for both. Pull together, that is the only way.

If every master plumber were to join the ranks, and show enthusiasm, not for a day, but for all time in the combined efforts now going on for reformation, those men who are giving up their time and money to attend to the work of the associations would feel more encouraged. Enthusiasm is what is wanted. Let this convention at Toronto mark the commencement of a solid combined effort that will start the ball fairly and squarely in the direction of reform. It can be done, and easily too, if every man will leave the lonely furrow, and join with his neighbors in attending the coming convention and making it the beginning of a new era in the trade.

PLUMBING IN THE COUNTRY.

In recent years the farmer has come to recognize the revenue producing capacity of labor-saving inventions in agricultural machinery, and now the farm without some machine, would be hard to find. The telephone and the electric light have also invaded rural districts until the farmer is brought closer to town life with its attendant advantages.

In the light of the fact that the farmer is anxious to realize the conditions of life in congested communities, it is unquestionably the time to cultivate his tastes in things which really have been fundamentals in the upbuilding of modern civilized living—in matters of sanitation, in heating, ventilation and plumbing. It is inexplicable that with all the eagerness that farmers have shown to surround themselves with twentieth century conveniences, so many farm houses are still devoid of the simplest features of modern sanitation. This is largely due to the laxness of those engaged in plumbing and heating in pushing their business to its limit.

A most promising field is open for the plumbing firms which take up the work of installing water supply, drainage and heating systems in country houses. One job properly installed will soon be the talk of the neighborhood, and all who can afford similar installations will be customers sooner or later.

OFFICIAL NEWS

N. A. M. P. & S. F. of CANADA

OFFICERS 1909-10

President,—Joseph Laurier, Montreal. Vice-Pres.,—G. H. Cooper, Toronto.
Treasurer,—H. Mahoney, Guelph. Secretary,—H. W. Munday, Montreal

Provincial Vice-Presidents,—Nova Scotia, Frank Powers, Lunenburg; New Brunswick, Wm. Watson, Moncton; Quebec, J. E. Walsh, Montreal; Ontario, R. J. Shannon, Toronto; Manitoba, R. L. Beattie, Winnipeg; Alberta and Saskatchewan, E. J. Young, Calgary; British Columbia, John Colbert, Victoria.

Chairmen of Committees,—Legislation, H. A. Knox, Ottawa; Sanitary, P. C. Ogilvie, Montreal; Apprenticeship, J. Griffin, Montreal; Essay, E. Russell, London.

Next Convention will be held at Toronto, August 31 and Sept. 1, 1910.

VICE-PRESIDENTS SHOULD GET BUSY.

National Secretary Munday has sent out cards asking officers to get their reports in shape for presentation at the convention to be held at Toronto the end of this month.

Every officer should come prepared to present a report—and a report of progress at that. The provincial vice-presidents and the chairmen of committees owe it to the trade and themselves to prepare their reports in advance and mail copies to National Secretary Munday, before the convention. Officers have been known to leave off writing their reports until they reached the convention, and some have even been so thoughtless as to hold up the business of the meeting while they wrote their report. This kind of work is discreditable in a convention of business men—and it is hoped that the Toronto convention will deserve the name of a business men's gathering.

There is no reason why the master plumbers of Canada cannot conduct their business, and organize themselves as well as their brother craftsmen in the States. They are made of the same kind of mud and all they need is to apply their ordinary common sense to the details of organization.

Let the officers of the association set a good example by preparing their reports beforehand, and by stirring up their fellow plumbers to attend the convention. Then work, rather than talk, should be the rule.

CONVENTION COMMITTEE FORMED.

At a meeting on July 25 a committe of Toronto master plumbers was definately organized with R. J. Shannon, 1233 Queen Street west, Toronto, as chairman, and Lewis Legrow, 50½ Harboard Street, as secretary-treasurer.

Sub-committees appointed at a previous meeting reported regarding the hall and matters of program and entertainment, and after discussion their reports were adopted.

Meeting Place.

It was decided that a trade exhibition be held during the convention, two halls being secured in Victoria Hall, Queen Street east. Space is available for about 30 booths, about 8 x 8 in size, where supply men and manufacturers can exhibit their specialties, meet their customers, and get acquainted with new friends. A large hall is also available for the meetings.

Convention Dates.

The convention will open on Wednesday, Aug. 31, at 2 p.m., the executive meeting in the morning. The exhibitors will also get their displays ready by Wednesday afternoon. Meetings will continue on Thursday and adjurnment will probably take place about Friday noon.

A Civic Welcome.

Arrangements have been made for a civic welcome to be extended the visiting delegates by representatives of the city.

The city will also entertain the masters and supply men attending the convention at a moonlight boat ride on Lake Ontario, on Wednesday night. Music will be provided by the city and the party will lay off the Exhibition grounds during the fireworks. In the event of bad weather reserved seats will probably be provided for the grand stand at the Exhibition.

Other Features of Program.

Thursday will be spent at business and in fraternizing with the supply men in the exhibition hall, and on Thursday night the party will visit the new Shea's Theatre, the supply men again being the guests of the convention committee.

It is hoped that the business will be concluded by Friday noon to enable visitors to take in the ball game or exhibition on Friday afternoon and evening.

Big Attendence is Assured.

Vice-President Shannon, has letters from over 50 master plumbers in Ontario, who say they will be on hand to participate in the fun—and business. Plumbers are poor letter writers, and that 50 can safely be doubled or tripled.

And then Montreal, Winnipeg, Halifax, Truro, Lunenburg, Moncton, Moose Jaw, Calgary, Edmonton and Vancouver, outside of Ontario are expected to send representatives, Port Arthur, Fort William, North Bay, Ottawa and other distant points in Ontario will be well represented.

Altogether it is safe to predict a real old-time convention of from 150 to 200 delegates from outside Toronto, where the local association now numbers nearly 100 members, and not counting the visitors expected from Buffalo and other points across the line.

Railway and Hotel Rates.

All the railways quote special rates to Toronto durthe Canada National Exhibition, which opens on August 27 and continues until Sept. 10.

Everything is favorable to a large attendance, and if the supply men take hold of the exhibition feature the meeting will be a record-breaker. Already about half the spaces available have been spoken for so this feature should be well worth coming a long way to see.

Hotel accommodation has been arranged for at the Iroquois and Palmer Hotels, and intending visitors should write ahead asking that reservations be made for them. Rates are $2 and $2.50 per day.

Supply men, by assisting in making the convention and exhibition a success, will be helping to bring about a state of affairs which will be more beneficial to both masters and themselves than have been the era of price-cutting, etc., which has lasted over the past three years.

Here's for a big convention.

Who wouldn't have selfish reasons in trying to bring about a reorganization of the trade? Unless master plumbers get good prices for their work they are going to do shoddy work—and few places in Ontario have a worse reputation for bum jobs than the city where the critic is located. A little more sensible selfishness and a little less jealousy and shortsighted price cutting would be a good thing for master plumbers and the trade at large.

J. E. Walsh, vice-president for Quebec in the National Master Plumbers' Association, also sends The Plumber and Steamfitter an encouraging report and says a good sized delegation will come from Montreal to attend the convention.

Cheap heat from electricity and stored for an indefinite period, the outcome of the Bell process lately introduced in London, promises to be an economic fact shortly.

The Plumbing Business

As long as the plumber clings to his traps, tubs, pipes and wrenches with a mind rising no higher than the mechanical details of his trade, he will be merely a "plumber." This series of articles will deal more particularly with the business end and readers should derive benefit from reading them

Written for the Plumber and Steamfitter by Charles H. Denison.

CHAPTER II.

Larger and better houses than in the past and thousands of them are waiting for the plumber to get busy installing suitable plumbing goods. The land upon which most of these houses stands has increased in value in the last few years. It costs more to build a house now-a-days, and a greater number of people of moderate circumstances are building dwellings costing from $2,500 to $4,000 than at any other time in history.

Other branches of industry and other trades seem to make a profit on this work at increased prices and why not the plumber? How much has he succeeded in increasing the scale of prices that pertain to his business?

Cutter Usually Gets Cut.

If he has failed to obtain a corresponding increase with other businesses does it not show that he is not very wide awake or else that he is a mighty poor man of affairs? Whether the scale of prices goes up or down it is a sure thing that the man in the plumbing business is entitled to a reasonable profit and if he sharpens up his pencil and "cuts" prices in order to freeze out some competitor, he is going to come out at the little end of the horn. Increased opportunities for business abound on every hand. Take a look at your own district for instance. Now this seems to differ and in this manner, as a rule the eastern section of the country is more thickly built up than is some other parts. In some towns that I know of not a new house has been built in ten years. Yet there is what may be called "retired prosperity" in those towns. People who have gone out of business, farmers who have "moved into town" and many of these people have the most primitive plumbing and heating arrangements. In the western part of the land it is the order of the day to erect modern dwellings with up to date improvements. Now let the plumber in business look around his town or his business territory and make out a list of all the people who have poor jobs or no jobs at all and he will be very much surprised at the number of names that he finds upon the list. He would not have dreamed that there were so many people in his neighborhood without the best improvements. Instead of looking for business for the future the attitude of the plumber has been to look for work at the present. Perhaps this is necessary in many instances to "keep the pot boiling," the result, again, of a too limited capital. The master has rushed into business to catch an amount of "work in sight" giving little heed as to what will take place when the extra amount of business has been completed.

Then comes the period of setting down and waiting for "something to show up." A thoroughly good business man don't wait. He gets out and digs up new business. The plumber has yet to learn how to do this. It is worthy of more time and study than it took to learn the trade itself and on the thoroughness with which the plumber learns the lesson depends the whole future of the business.

Plumbers Planned Well.

A lesson in the wise provision for the future and a decidedly progressive step along sanitary lines, and also a great saving of money, in the end, is offered by the example of the city of Gary, Indiana. In this city, which rose as if by magic, out of the hillocks of white sand, the streets, the sewers, and the waterworks were all built at the same time. It is stated that each house is part of a widely planned system of sanitation and comfort. The plumbers, with but a few changes, drew up the ordinance for that city.

Here seems to be at least one case where the plumber arose to the occasion, or even went it one better. There is another field that will bear cultivating and that is the manufacturing concerns, who, in some cases are lax indeed in supplying toilet facilities for their employes. To such an extent is this negligence persisted in at some places, that it would seem that the employes had no rights that the employer was bound whatever to respect. The more one considers, the larger the field seems to appear. There are dozens of places where the plumber has not gotten fairly started yet and there are scores of specialities that he has never yet tried to market, so why try and keep the little knowledge in the game to yourself? It promotes neither business nor friendship and merely turns you into one of the most selfish of beings. This selfishness is one of the things that permitted the correspondence schools to arise, because the public simply would not "stand" for seeing knowledge so bottled up.

The want of system and of any standard to which to grade by is painfully apparent to all. One would think that it would be the plumber himself who would be foremost and the most interested in bringing about changes which would benefit his business, but the facts do not seem to bear out this supposition.

Harm Done by Knockers.

We have certain instances of where a limited number of the best and wisest in the business have fought and struggled for certain definite reforms. It seems as if where one has succeeded in originating anything that there have been fifty who would rise up and "knock" the same. This utter lack of consistant action hangs up the progressive movements and year by year matters are postponed which should have been attended to long ago.

No one man, or set of men, has yet been strong enough to "frame up" an ordinance that could be made to apply universally. Certain principles of trade and honor generally govern the different lines of business. Is it noticeable that such matters get much action in our business?

Numerous laws have been passed relative to plumbing practices, but they lack conformity. One city may approve of the main trap; another city may have done away with it entirely. Out of all this confusion must come some law and order as applied to the craft or trade and further than that there must be some well recognized mode of conducting the business established. Referring to the business practices, I do not mean to infer that they would be made obligatory by law; but that it will, in time, be shown so plainly be-

yond all doubt that certain practices must be observed, that even the most stubborn and ignorant will see that they can not afford to omit the observance of the same.

Before proceeding further with various matters, I wish to give to the plumber, some of the credit which he deserves. Whether from love of the trade, force of circumstances, or just merely from chance, no matter, he has done it quite efficiently, he has made our large cities habitable and healthful, according to the word of the commissioner of health of the city of Chicago, Dr. W. A. Evans, who also recommended that the people of the agricultural districts be provided with the same comforts that the city dweller enjoys.

The latter remark is certainly a business getting hint for the plumber. I shall show, later, just how the plumber can get this large amount of extra business and nail it in three cases out of five,—if he so desires. If the plumber has done what has just been credited to him with no more advantages than we know he possesses, who shall say what the end will be when the plumber arises and takes unto himself an education along proper business lines?

This merely is only another illustration which adds to the remark which I have before made, i.e., that we are only in the very infancy of the plumbing business. As we go on with various matters we shall see where the business can be developed along many different lines.

Pointers for Young Plumbers About Measuring

Suggestions Made by a Practical Plumber, Who Has Worked With the Tools in all Parts of America — How to Use the Pocket Rule, Tape and Measuring Stick.

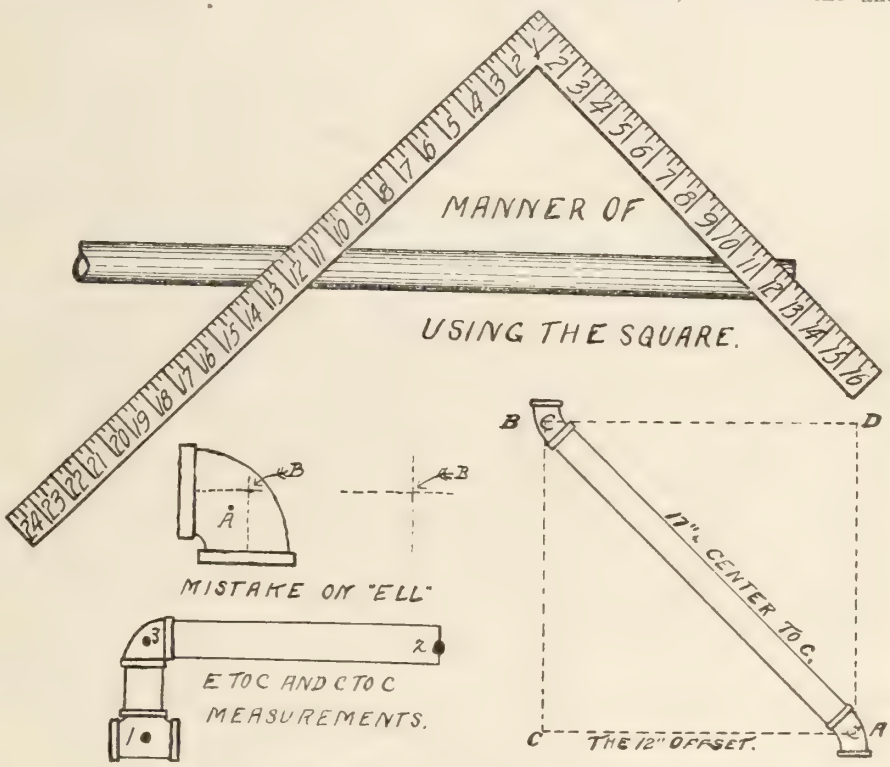
One of the first things that the helper should get next to is how to take a measurement and not fall down on it. Many bosses are quite cranky about showing how to do this and so for the benefit of the apprentice who may be in doubt I have gotten together a few drawings which may be of interest and some profit.

The helper should provide himself with a four foot rule which should always be his very own for all time. I say four foot instead of six foot because the longer rule is bunglesome and often in the way and is forever getting broken. A two foot rule is too short as many of the measurements run longer than two feet.

On the longer rules you will soon find yourself reading in inches only, instead of feet and inches. For taking the very long measurements of course a tape line will be used. A light measuring stick ten feet in length comes in mighty handy in getting measures of the risers and also the branches in the basement.

With the pocket rule, the tape and the measuring stick, the helper is in shape to start his measurements. When one can take these correctly much time and trouble may be saved, for I want to say that not every plumber or fitter can always get his measurements right.

One of the commonest mistakes made is to neglect to "take out" for the fitting, whatever the fitting may be. The fitter seems to forget that the tee, ell, cross, or valve takes up a little room for which a certain allowance must be made or the pipe will be too long. For instance, take the "E to C" measurement 3——2 on the figure given. This means the distance from the centre of the ell to the end of the pipe or the cut made.



Suggestions for Measuring Pipe and Fittings.

Now nine workmen out of ten will take the measurement from the exact centre of the ell as it looks to them and is drawn on this drawing. This is not right (though on small fittings it would make but a trifling difference) and the reason why it is not the true measurement can at once be seen when we look at the flat beaded ell on which the mistake has been made. The apparent centre of the ell is at the dot "A" and here is where the general run of workmen measure from.

When you get that ell "hooked" up and the pipe in place it will be seen that something is a little off. It will be seen that the apparent centre of the ell is not the centre of the pipe run as it makes the turn at the right angle. You can screw together some pieces of pipe on an ell and continuing the lines observe for yourself. You will then see that the measurement should have been taken from the point "B" which is the correct point. Now the difference between the points "A" and "B" would amount to quite a little on four inch or larger sized fittings and that is why so many measurements have to be cut over or strained into place with great trouble. Do not forget the right angle at this point as shown by the dotted lines at the right of the figure and make your allowance accordingly. A little time at the bench passed in figuring this out for yourself will save a lot of trouble later on.

Where there is a fitting on each end of the pipe it is called a "C to C" (centre to centre) measurement and a double allowance must be made for the fittings; or rather you must allow for each fitting. The measurement "3——2" is an end to centre measurement as previously explained. Measurement "1——3" is a "C to C."

There are few measurements more perplexing to the average journeymen than the 45 degree ones and this is because he many times "guesses" at them or attempts to hold the pipe in place

while he "catches the measure." You can never get it that way, my boy, and don't you be foolish enough to try it. Now I am going to give a simple rule that will work all right up to two inch pipe and beyond, after you have gotten the hang of it. If you can tell how much five times six is then you should be able to work this rule. Take the figure A-B-C-D.

You are going to find the length of the pipe to make up the forty-five degree measurement "A—B." An offset is the difference in the position of the two runs of pipe and in this case we will assume twelve inches as that difference. By measuring on the diagram we find that the length of pipe with the two 45 ells will be (approximately) 17 inches, "C to C."

Now make the correct pipe size allowance for the two ells and substract it from the seventeen inches and you have the proper length to cut the pipe to make the 45 degree "offset." This will work all right on pipe sizes up to and including two inch, although the distance from corner to corner is not exactly 17 inches, the difference in threads and fittings will make the measurement "hold out."

An Important Rule.

The majority of 45 degree measurements are less than three feet in length. The rule derived from the foregoing explanation is: Multiply the actual offset in inches by 17 and divide that product by 12. Subtract whatever is necessary for the required fittings and the result is the correct length desired in inches.

As stated previously this is not a hair breadth measurement and so when I, at another time, gave out this rule which I have worked most successfully for many years, a gentleman from the far East got after me and came back with the measurement by using the carpenters square and I will give it with his planations. I seldom carried a square in my "kit" and don't believe that the majority of plumbers or fitters make a practice of so doing.

The directions for working this plan on a twelve inch offset or any other length are as follows: "Lay the common steel square on the pipe to be cut, touching the two points 12——12, and you have the accurate length from centre to centre. Mark off the allowance for the ells and cut at that mark." In case there should be a measment required such as 25 inches, the gentleman says "mark once from the numbers 12 to 12 and then 13 to 13, or say 15 to 15 and then 10 to 10, or twice twelve and one half to twelve and one-half and you have the measure."

Therefore if you have the square handy you can use it, if you so desire and if some blamed mason happens to "hook" your square when you are not looking and you are in a rush you had better have my rule in your head handy for use, being sure that no one will ever steal it out of your "coco" if you once stow it safely away.

Try and get the habit of taking from six to a dozen measurements accurately at one trip. A poor mechanic will take only one or two measurements and then run to the place to put them in and will spend almost as much time tramping as he does working. This always makes the boss "sore" and he soon gets it in his head that he is going to fire that "dead slow" fitter or plumber —and does it.

It's no trick at all to take measurements and get them all right if you only go at it in the right manner and keep cool, while so engaged. Just lay the lines out as you intend them to go and then measure it out making the proper allowances and have confidence enough in yourself to cut up the pipe to your own measure, no matter how big the pipe may be. I have seen journeymen who would cut correctly all day on one or two inch pipe, but put them to work on six-inch pipe and they very soon got all tangled up. At the same time they knew what the lengths to be cut should be, but they did not have the "sand" to cut the larger pipe fearing to spoil it. Take time enough to measure, be sure that you are right, then cut to the measure.

RUST JOINTS AND HOW TO MAKE THEM.

The use of the lead-caulked joint in cast iron and of the threaded joint in wrought iron pipe lines has become so general that the rust joint is seldom considered in the present-day pipe work. A probable reason for this, together with the advantage of the rust joint and directions for making it, is contained in the following, from a recent issue of the Florists' Exchange:

Rust joints seem almost to be peculiar to greenhouse heating. Many florists and gardeners know how to make these very tight and lasting joints, but very few plumbers or steam fitters seem to understand just how they are made. A vast majority of greenhouses are heated by hot water, and of these nearly all private installations are constructed of 3½ in. cast iron pipe, quite commonly called 4 in. greenhouse pipe, the outside diameter being 4 in. This pipe is almost always made up by means of rust joints.

No tighter or better joint than the rust joint is possible. When made properly it will never leak, and when it does leak, because not properly made, it is not difficult of repair.

The joint, being of the same material (cast iron) as the pipe, is subject to the same degree of expansion and contraction, but the best feature of this joint is its general utility. This joint can be made by any person who can handle a hammer, a caulking tool and a cold chisel. The work requires no more expensive and no more difficult tools than these, and it also requires very little to make. The labor is not heavy compared with that of cutting even smaller sizes of wrought iron pipe with modern tools, or that of turning up joints of wrought iron pipe.

Cast iron pipe will outlast the very best wrought iron pipe. It resists corrosion much better than wrought iron pipe.

Coil fittings, headers automatic and non-automatic, are now made with hubs to receive 2 in. wrought iron pipe, and 2 in. pipe is now quite as frequently caulked into the header fittings as it is screw-jointed into the same. Thus, right and left hand and union joints are done away with. The work is simplified and cheapened both because it requires less time to perform and because it requires fewer tools.

A florist with a cast iron pipe heating plant needs only an extra length of cast iron pipe, a couple of sleeves, a few pounds of iron borings, a hammer, caulking irons and cold chisel, and he feels competent to meet almost any leak.

The man with a wrought iron pipe system must carry an assortment of large and expensive tools or have easy access to a pipe fitter's establishment.

Place four or five strands of rope around in the space between spigot and hub of pipe and calk in solidly. Moisten the borings slightly so that when squeezed in the hand they will cake, then put in a layer of the moistened borings on top of the rope and calk in solidly, then another layer of borings and calk in, and so continue the process until the space is filled up. To insure a tight joint both rope and borings must be hammered in as tightly as possible. Do not use sal ammoniac or salt.

HEATING SWIMMING POOLS.

The heating of the swimming pool of the Hastings, Neb., Y.M.C.A. is accomplished by injecting steam into the water from a low-pressure heated boiler. It is stated that a 4-in. pipe is installed, and that the 40,000 gal. of water are now heated to 76 deg. in 3 hr. The cost of the apparatus is given at $38. Previously two days were required to heat the water.

The Privy, its Uses, Abuses and Dangers

Paper Read by Burton J. Ashley, Chicago, at the Last Convention of the American Society of Inspectors of Plumbing and Sanitary Engineers.

The privy is a primitive institution used by primitive people to serve a primitive purpose and always will be. Comparing its use with the Mosaic practice (Deuteronomy 23:13), it is more respectable, but less sanitary. Moses knew the powerful qualities of the upper soil to purify, without probably knowing the reason why. If all reports are true, the Chinese nation still only know that much and have not advanced beyond Mosaic practice — perhaps have retrograded from it in some particulars. England and the United States furnish examples of the most advanced sanitary practice and in that particular are leading the world in their adoption of sanitary conveniences which in turn safeguards health until our average mortality is growing considerably above the proverbially "three score years and ten."

That the privy is a necessity as a primitive measure goes without saying. Among the poorer classes nothing better can be used. In unsewered districts of cities there is nothing better adapted to the purpose.

Privies are built in two ways, viz.:

(a) Without a Vault—called "Privy Midden," the word "Midden" meaning "dung hill."

(b) With a vault.

Of the two, the privy midden is by far the more sanitary.

Providence has endowed the surface of the earth with natural forces, that make for purity and cleanliness, viz.; air and soil. They are nature's great purifiers and both are necessary to the natural purification of any organic decaying substance.

Decaying Matter Dangerous.

Decay is the first step towards the purification of dead organic or animal tissue. Such decaying substances are inimical to human or animal life, especially if the substance be the dead body of animals or human beings or the decomposing products of their living, and therefore dangerous to life and should be transformed in such a manner as to protect human life from scourge of pestilence or death which such decaying substance might and is liable to create. During the stage of decomposition, the fluids and gases produced are very toxic, i.e., poisonous. When this toxicity has spent its force, then the resultant fluid or substance is without danger of infection. As decay proceeds the air provides oxygen necessary to the chemical change taking place and provides as well, the means for receiving and disseminating the gases which are produced by such decay.

The soil on receiving parts and particles of such decaying substance whether liquid or solid, performs the exceedingly purifying function of nature—nitrification, through contact of the dissolving particles with air and which is made possible by the arresting of these particles in the upper soil where the atmosphere is in abundant contact, and this nitrifying or aerating process is the final process necessary to the conversion and complete purification of all organic decay, and satisfactory purification is impossible without it.

Don't Overwork Soil.

So long as the soil is not gorged or overworked it is to humanity one of the greatest known safeguards to life, saying nothing of its function in producing sustenance for all living beings. Gorge mother earth with pollution and she gets sick and refuses to respond, and here a lesson must be learned in the use of the privy. So long as human excrement is deposited in a favorable manner and in quantities limited to the capacity of the air and soil to convert it, the act of using a privy is in direct agreement with the laws of sanitation and health. It is in the abuse of this natural fundamental safeguard that danger arises.

Enough has already been written by eminent sanitists of both this country and of Europe as to what labor and attention is necessary to maintain a privy properly; and without discoursing upon the subject further, we will append the following formula as containing the elements of a satisfactory maintenance, viz.:

(a) Don't over-pollute the soil about the midden.

(b) At reasonable intervals remove the collected excrement.

(c) Provide the privy with plenty of fine dry dust, or dry pulverized earth.

(d) So construct the privy as to prevent access of either fowls or flies.

Soil pollution about the privy midden is due to liquid soakings only. With good aeration, the soil surface has a tremendous recuperative power. Let the air circulate freely under the privy and over the soil.

Disposing of Solids.

Keep the solid excrement removed in order to permit the contact of air to the soil where the midden is collected. Don't bury excrement. Scatter it thinly on cultivated ground and sprinkle one or two inches of dirt on it. The soil will do the rest and do it rapidly, effectually and safely.

Don't use lime. It retards purification and only lessens the odor temporarily. Lime or like disinfectants is a bactericide merely retarding nature's effort. Decomposition is absolutely sure to set up again as soon as the strength of the lime has run its course and is exhausted. Use dry pulverized dirt —not moist dirt—but dry fine dirt. Road dust cannot be equaled by anything. Dirt is not a disinfectant but a deodorizer and facilitates nitrification, nature's great purifying process. Lime retards it. The earth or dust also forms a vehicle with which the decomposing substance can be mingled and inoffensively carried away.

Give the space beneath the privy plenty of air, but screen it off from the barn-yard fowls and flies. The former for reasons that need no repetition. The latter because of their unending migration to and fro from filth of any kind to the food on your table upon which they will crawl and pollute.

I visited a camp in the Adirondacks last summer where every appointment but the privy closets was the best, but the privy closets were supplied with damp earth instead of dry and deodorization was a failure. Shortly after I visited a well kept camp in Michigan and leading from my sleeping room was a dry earth closet that was provided with dry earth and deodorization was perfect. Not the slightest odor whatever could be detected even in the atmosphere of the room.

How to Prevent Abuse.

The midden privy rightly built, not overused and well attended to is not a nuisance nor even dangerous, but the proneness of humanity to neglect and procrastinate, is largely the cause of the privy nuisance everywhere and we must stop to enquire whether it is the privy or the user that is at the bottom of the trouble. The proneness of the human animal to produce and affiliate with filth has been the cause of all the great epidemics and so long as said human animals show contempt for respectable in-

odorous sanitary conveniences, just so long does he invite epidemic.

For modern achievement in midden privy design and regulation, laurels must be handed to the City of Richmond, Virginia. There the unspeakable vault is prohibited; the size and design of the privy is prescribed; and Musca domestica —the typhoid house fly—is screened out from beneath and a screened window is inserted in the privy for ventilation. Dr. E. C. Levy, Health Officer of Richmond, is deserving of his full portion of praise for the present sanitary conditions existing there.

A privy vault is an example of barbarous engineering. Migratory tribes still resort to the "hole in the ground," knowing their abiding place is only temporary and that the tribe will be well out of the way before serious dangers can arise. Enlightened humanity imitates the barbarians only in that he digs the hole. He differs from the tribal savages in, that after digging the hole he stays by it and instead of trying to reform it or improve ot, he digs it larger and deeper. This class of safeguarding human life is no higher in its conception than that evinced by an ostrich when she runs her head under the sand to prevent her bodily destruction by the simoon. The ostrich is just as good an engineer as he who advocates the privy vault or its unheavenly twin, the cesspool, as a means of safety. Safety does not consist merely in getting dangerous elements out of sight.

The privy vault gives the purifying forces of nature no opportunity to purify. Decay cannot proceed farther than to begin, and nitrification, which is the real purification ,cannot even begin, and, so the contained befoulment in the privy vault or cesspool remains befoulment, sickening and debauching the earth around it.

No reasonable amount of attention possible will ever make this unholy hole clean or sanitary.

There is some possibility of keeping the midden privy reasonably clean and sanitary; the privy vault in no wise can be kept clean.

Some Abuses Outlined.

The shortcomings of humanity must here be brought before the bar of sanitary cleanliness and, tried, will convict 99 per cent. of the people who would be highly offended to be regarded otherwise than clean and respectable.

Show me a privy and I will tell you whether the owner is a desirable citizen or not. Nor does this widespread neglect lie at the door of the poor and ignorant of our cities alone. Go into the farming communities and you will frequently meet as deplorable a condition of privies, convenience and maintenance as of the squalid inhabitants of cities whom our respectable farmer cousins would scorn to associate with. Nor should the proprietors of large numbers of country hotels be spared in this particular as they are not a whit behind the farmer, and proprietors of many railroads are as neglectful of privy maintenance as either the hotel proprietor or the squalid citizen of the city.

The sleeping indifference, ignorance, stupidity, filthiness or what not of some people to the necessity of maintaining sanitary and respectable privy accommodations is distressing, and many of the hotels in country towns, including privy accommodations at the depots of some of the wealthiest railroads in the land, are such as to make one cry out for shame and disgust. Accumulations have been permitted until the use of the privy in some instances is impossible. To breathe the very air in or about some of these vile places is most revolting and disgustingly suffocating. The evidence of any attention is usually entirely wanting. The opposite is the exception and not the rule. Are health authorities sleeping that these malignant pest spots should exist within corporate limits? Were it not for hurling a bomb into the centre of this convention, I would publicly name two or three cities represented here that are permitting conditions at railroad depots so disgusting as to repel swine. If local laws are inoperative and at fault, and not the officials that should enforce them, then let laws be made, that will oblige some of these caterers to public patronage into being at least respectable, if not entirely sanitary.

Progressive people are no longer tolerating primeval inconveniences. Selfish landlords in large numbers may be classed among non-progressive and the disregard they show for the lives of the tenants who fill their coffers is disquieting and barbarous, and comparable with the inaction of many railroads or other corporations in maintaining sanitary conveniences for their patrons and employes.

No one says the ignorant or the knave will resist or grumble at the demand of any health officer to "clean up." Such derelicts would not want a neighbor to maintain under his nose the insalubrity he is willing to hand out to his customers or to his employes.

Dangers Pointed Out.

Dr. R. W. Johnston, the inspector appointed by the Local Government Board of London to inquire into an outbreak of enteric fever in an urban district, reported that the existence of privy middens were responsible to no small degree, for the dissemination of fevers by the transmission of the infection by house flies and by other ways and followed his report by a recommendation that the London Council should adopt measures to hasten the conversion of privies preferably into water closets. He further recommended the emptying of privy middens at intervals not exceding two weeks and, if possible, weekly. We recite this instance to call attention of the American reader to the degree of attention which our English cousins regard as good sanitary practice in caring for the privy.

We believe it unnecessary to enter into a lengthy essay of reasoning to induce the common mind to recognize the danger to human life that may arise out of both the use and abuse of the common privy.

Perhaps the following illustrations will be sufficiently potent in fixing in the mind the possible dangers that may arise out of the existence of neglect of a privy.

Pollution of wells from leaky privies is disgustingly common and dangerously prevalent, but increasingly so in rural districts. It is a very disquieting sight see chickens filling their crops from the filth of the privy and to their having free access to the well-curb or pump platform. Nor is it pleasureable to realize the dire effects possible in consequence of house flies crawling upon middens with the consciousness that they will shortly visit your table and crawl over your food, leaving sickening morsels thereon for you to swallow.

Causes of Disease.

A recent investigation at Salem, Ohio, disclosed nineteen cases of typhoid fever in families, every one of which were patrons of a dairy that had hitherto been regarded as having been maintained in a good sanitary manner. Upon probing deeper, however, the following facts were brought to light. After the bottles and utensils had been washed and scalded, they were rinsed and cooled with water taken from a well within twenty feet of which was a privy vault, the contents of which were flowing over the ground. Analysis made of the water, it is needless to say, revealed the dangerous pollution that had been caused by the use and neglect of the privy.

One can scarcely conceive of the countless ways in which ground or well water pollution can take place, in consequence of neglected privies or cesspools. Add to this other countless ways that communicated pollution may reach the alimentary canal through contact and one can readily perceive the danger that can arise from the misuse and neglect of this questionable convenience.

But let us not condemn finally this much abused contrivance until a fair trial is had by submitting the testimony of those best qualified to give evidence.

To bring this matter to trial the fol-

lowing question was asked of the health authorities and inspectors of the one-hundred largest cities in the United States: "What good or bad have you to say of the privy?" and the following are extracts from the testimonies received:

Experience of Various Cities.

"The vault closet is undoubtedly one of the most prolific disease-spreaders existing in any community, being a receptacle for not only the disease-bearing, germ-filled excrement from affected persons, but is also a depository for all manner of filth, old rags, and even sputum from persons affected with tuberculosis. It is at the same time a breeding and feeding-ground for countless numbers of flies. These flies, owing to their migratory nature and their disposition to track over foods prepared for human consumption, must assuredly carry on their feet and bodies more or less bacteria from the contents of the vault. It will be readily apparent to any thinking mind that the vault closets, through the medium of that common house-fly, is a very dangerous as well as offensive institution."—Seattle, Wash.

"Privies, even under best conditions are a menace to public health, favoring especially the spread of typhoid fever. There is not a more prolific source of disease than the ordinary privy, swarming with flies at all times, except meal-hours, when these same flies may be found in the kitchen and dining-room, wiping their filthy feet on the food. Open dry closets in a city must be regarded as an ever-present danger not only to those forced to rely on them and to their immediate neighbors (though these are, of course, the worst sufferers), but also to the entire community. These dry closets and wells constitute a menace the importance of which can scarcely be exaggerated."—Richmond, Va.

"The privy vault as a rule is a foul breeding-spot, particularly in cases where typhoid fever has existed and the discharge from the patients are emptied into said vaults, where, through ignorance or neglect, the discharge has not been disinfected. The privy vault is often a menace to the water supply of a premise or dairy where the water supply consists of well water and the drainage from the vault slopes towards the well."—Newark, N.J.

"The so-called "privy vault" is a nuisance to those who are so unfortunate as to have to use it and invariably they are a vile nuisance to most people in the immediate vicinity. The emanations from a house drain are apt to cause most people considerable apprehension. though these same people will use the privy vault without any visible sign of inconvenience."—Los Angeles, Cal.

"The department of health does not hesitate to express a very strong condemnatory opinion, both on the ground of offensiveness and the more important reason of menace to health. We have no doubt that food supply is contaminated unnecessarily by passage of flies from privy vaults to kitchens and food-producing establishments." — Chicago, Ill.

"It is the most foul nuisance, very liable of neglect on account of its filthiness, a breeder of all kinds of diseases and not to be tolerated a minute where it can be done away with, by replacing it with a sanitary appliance."—Fresno, Cal.

"A privy is a nuisance wherever built. Mother earth is continually absorbing the contents and delivering it into our own or our neighbor's wells, thus contaminating the water we think is pure." —Saginaw, Mich.

"The box closet or any privy vault is a stinking proposition and ought to be replaced with a more up-to-date method which can be done with the introduction of a septic tank."—Houston, Texas.

"Privy vaults under the most favorable conditions should be abolished. There is no longer any excuse for not making use of proper plumbing appliances."—San Antonio, Texas.

"They are a necessary evil. Privy vaults are a constant source of danger and are rarely cleaned and disinfected and then only on the order of an inspector or the board of health."—Lowell, Mass.

"They are a menace to the health of the community, certain to contaminate the ground-water supply, unsightly and not conducive to civic beauty."—Indianapolis, Ind.

"Privy vaults are the largest contributors to the pollution of streams, springs, and wells, and the dangers arising therefrom are practically inestimable."—Schenectady, N. Y.

"They are the greatest disease-breeders that any city has to contend with and the sooner they are done away with the sooner contagion will be wiped out." —Davenport, Iowa.

"The yard closet is some improvement over the privy vault—both are a nuisance. Yard closets are a good-for-nothing plumbing fixture."—Milwaukee, Wis.

"There is nothing good to say of the privy. They should be prohibited in any city, town or village, and a modern system of house sewerage installed."—Reading, Pa.

"The privy vault is a menace to the public health under the very best construction."—Detroit, Mich.

"All privy vaults are dangerous and they should not be permitted."—Camden, N. J.

"Privies should not be allowed in any city where there is a sewerage system." —Canton, Ohio.

"The poorest form of a closet that can be constructed."—Columbus, Ohio.

"Cesspools are infinitely better than privy vaults."—Manchester, N. H.

"Foul smelling, disease-breeding holes."—Wilmington, Del.

"They are undesirable."—Bayonne, N. J.

"We consider privy vaults a nuisance."—Joliet, Ill.

With yourselves as judges, I "rest" the case, knowing your verdict will be just and righteous, and, I hope, sanitary.

PLUMBING IN ENGLAND.

A Missouri plumber, visiting in England, writes the following impressions of the plumbing work he saw there:

"In many comforts and conveniences, they are behind us in America. I saw considerable plumbing which is quite different in style from ours. The urinal stalls in public buildings and public comfort stations are very similar. The lavatories appear very crude in style. They are made mostly of porcelain and very well put up. The closets are very good earthenware but nearly all supplied from iron cisterns of the high tank kind. All flush and supply pipes are of lead.

"I did not see a low down outfit at all and a contractor in London informed me that the ordinances would not permit the use of nickel plated pipes (all must be lead). The kitchen sinks in most of the houses are very crude. They are made of porcelain and set on brick piers, the floors of most kitchens being red tile. The brass work on lavatories, sinks and bath tubs is twenty years behind our times. Nearly all brass finish, very little nickel plate, and all of an awkward design.

"In most places the tubs, on account of their peculiar shape, are a fright. In some of the new houses, tubs similar to ours have been installed. The soil pipes are of lead and are run on the outside of a building in plain view. A great deal of lead is used for this purpose. I saw some stacks of lead soil pipe with 4 inches and 1½ and other branches wiped in, the work being perfectly done. The man that put it in must have thoroughly understood his business. It was the best lead work I ever saw.

"There was some of this work being done at Windsor Castle when we were there and lead was being used for bath waste pipes and rain water conductors. The men who were putting up this work were getting the enormous sum of nine pence per hour for their work, but they work very slow."

The Plumbers' Apprentice of the Future

The Apprenticeship Committee of the Ohio Master Plumbers' Association Outlines a Plan of Educating Apprentices as a Means of Improving the Plumbing Trade.

What seems to us to be the ideal system is the one which would be patterned, in a measure, after the so-called Co-operative Courses in Engineering at the University of Cincinnati. These courses are so planned that students take the work alternate weeks in the Engineering College of the University and at the manufacturing shops of the city. The classes are divided into two sections, which alternate with each other, so that when one section is at the university the other is at the shop. The length of the course is six years.

During the summer the students work full time at the shops, but are given several weeks' vacation. The practical work at the shops is as carefully planned as the theoretical work at the university, and in all cases the students follow, as nearly as possible, the path of the machines manufactured from the raw material to the finished product. For instance, a student in electrical engineering spends his first year in the foundry ; the next year and a half in the machine shop ; the next two years in the commutator, controller, winding, erecting and testing departments, and the subsequent time in the drafting and sales offices.

A contract is signed by the student, the university and the firm. This contract has a blank space to be filled out with the shop work the student is to receive during the six years of the course. In all cases the dean of the engineering college and the professor of electrical, mechanical or chemical engineering, as the case may be, confer with the manufacturers in planning this course of shop work, so that the students get a logically and carefully arranged shop and business training.

Rate of Wages Paid Students.

Students are paid for their services at the shops on a scale of wages which begins at ten cents an hour, and increases a cent an hour every six months.

At Fitchburg, Mass., the co-operative system is a part of the public school system and instead of teaching engineering takes up the trade problem. The students are divided into two groups, which alternate every week ; that is to say, this week one-half of the students are in the day school and one-half are in the shops. Next Monday morning these groups will change, and those who are in the school this week will go to the shops, and those who are in the shops will go to school. Since the public school becomes a part of the apprenticeship system, it has a voice in the organization of the apprentice course in the shop, and is in loco parentis to the boy, so far as his shop work is concerned. It ought to be obvious that the boy will receive a fair training in the shop, because the school is in a measure watching over this phase of his work.

It is not intended, of course, that this plan should apply only to factories. It will apply to a boy learning the tailor trade, the plumber trade, the baker trade, or any other trade. It is necessary, however, to obtain two boys to alternate in the shops.

The course in Fitchburg is of four years' duration. At the end of that time the student has been taught the simple science underlying his trade ; he has been taught shop mathematics ; he has been given a certain amount of cultural work ; he has become a fair mechanic. In brief, he is at the beginning of specialization.

It has been found further that the money earned every alternate week, and for full time during the summer, is sufficient to pay for the simple wants of these boys. It is also true that there is seldom an instance when a boy is hindered by financial conditions from taking such a course.

The Shop Co-ordination Plan.

Another feature is the work of shop co-ordination. In order to explain this, the method of co-ordination of theory and practice in the Engineering College at the University of Cincinnati will be used as an example. The co-operative engineering course at the University of Cincinnati is of six years' duration. There are therefore, six classes, and there is one shop co-ordinator for each class.

The shop co-ordinator is a college graduate acquainted with shop practice. He spends every morning at the university and every afternoon in the shops. His function is to make a direct weekly co-ordination of the work of the shop with the technical work of the university. This afternoon, for instance, he may be at the shops of a local manufacturing company, where he will observe the student-apprentices at their work. He will know what they are turning out, their "speeds, feeds and cuts," the angle of the tool, how the batch of work is "ticketed," how the work is set up, the power drive ; in short, everything important in connection with the operation. Next week these young men will be grouped together with their classmates for two periods in class, when he will explain the functions of the particular articles on which the students were working in the machine which the local manufacturing company builds.

He will take up all questions of speeds, feeds, cuts, accuracy, etc. ; figuratively speaking, he will take from the student apprentices the blinders which would restrict their vision except for this explanatory work. The "ticketing" of the batch of work is gone into, the system of shop routing is explained. Ultimately, all problems of shop organization, shop accounting, cost keeping, shop planning, power transmission, heating, ventilating, lighting, etc., are discussed during the six years' course. In conjunction with this a card system is employed, by means of which everything the student does in the shop that exemplifies a theory taught in the university is called in detail to the attention of the teacher of the theory, so when the student comes to that particular theory the exemplifications which he has had in his practical work in the shop are called to his attention. It will be seen, then, that out of the student's own experience is drawn much of his course in mechanics, thermo-dynamics, machine design, strength of materials, etc.

In the co-operative work in the public schools, in connection with the trades, this close and immediate tie is taken up in a modified way. There will be a shop co-ordinator for such trades as have a fairly close relationship, rather than by classes, as in the university.

Principles of Co-operative System.

The fundamental principle of the co-operative system is very simple. It is this : the technique or the practical side of the work is taught only in a shop which is working under actual commercial conditions, and the science underlying the technique can be taught properly only by skilled teachers. All questions as to who shall supply the school teachers, the shop or the public ; the hours the student works, and the hours he is taught ; the periods of alteration of shop and school work, if alternating periods be used ; and the curricula of the schools —all these are matters of detail to be considered for each particular case.

The economy of the system is at once apparent. Under the co-operative plan the schools will not require any physical equipment ; all their money can be used for brains and for buildings for teaching purposes only. There is, further, economy to the student. In this case he is earning while he is learning, while under the trade school system he does not earn until he has completed his trade education.

Your committee is of the opinion that a scheme of this sort, which would enable young men to learn the practical side of the trade in plumbing shops and to receive instruction in the science underlying the trade in a school which would give such instruction as would make the apprentice more efficient, would solve, in a measure, the problem which confronts us.

It should be noted in this connection that the co-operative system is intended to take the school to the boy already in the shop. It is not intended to take the boy who is going through the school and, without any investigation as to his fitness for the work, place him in the trade; nor must the periods of school work and shop work alternate by weeks, necessarily. In Cincinnati there is a school for machinist apprentices, where the apprentices attend school one-half day each week for four years. They receive instruction in shop mathematics, shop drawing, etc. About 250 apprentices are now in attendance at this school, which is a part of the public school system. They are paid for the time they spend in school, just as though they were working at their machines, and the employers have found that their efficiency has increased to such a point that there is no loss by paying them for this half-day for school.

It is the opinion of your committee, that the ideal training of the future plumber's apprentice is not so far in the distance as might seem likely to the members of the organization.

Water Service Systems a Profitable Side Line

Barrie Plumber Shows an Engine and Tank in His Display Room—By Getting After Well-to-do Farmers and Country Residents a Lot of Profitable Business Can be Secured.

The past few years have been profitable ones for both farmers and city folk and as a result a demand has been created for modern plumbing fixtures and water service systems far beyond the reach of the municipal waterworks in cities and towns. Wealthy city people who spend the summer in country residences naturally want the same conveniences they have been used to in their city homes, and enterprising manufacturers have devised engines, pumps and tanks which can be installed by plumbers so that the country home can be made as thoroughly modern as the city residence.

Farmers, too, seeing what the summer cottagers have secured, have come to realize that they can have the same advantages all the year by taking advantage of the inventive genius of the manufacturer of plumbing goods, and having the money to pay for sanitary equipment, is a fit subject for the first enterprising plumber who goes after the business. And in all parts of Canada to-day, plumbing firms are making good money by cultivating the farmer and country resident trade and canvassing them for the installation of septic tanks for sewage disposal, water service systems for sanitary equipment, and steam or hot water boilers for heating purposes, it being possible to sell boilers and radiators where water systems are installed.

Progressive Barrie Firm.

Landon & Flesher, Barrie, Ont., have been one of the live firms who have recognized the possibilities of this branch of trade and, as will be seen by the picture of their shop interior, have fitted up an engine and tank which they use to demonstrate to customers the simplicity with which the pumping machinery can be operated when installed. They find that this practical demonstration makes it far easier to close a contract than if they merely showed a catalogue to a customer. Then, having secured the order for the water system, they show tubs, sinks, lavatories, closets, showers, etc., and usually get a good order for this sanitary equipment.

One of their most recent instalations was a "Peerless" water service system

Display in Landon & Flesher's Plumbing Shop at Barrie, Ont. Note the attractive bathroom fixtures, shower bath, tiled wall and floor and water service equipment.

in the residence of Samuel Lukes, at Bradford, south of Barrie.

Mr. Lukes' residence is located in the centre of a three-acre lot, which includes lawns, tennis courts, gardens, stables, etc., and these are furnished with an adequate supply of hard and soft water from 36x10 feet and 36x6 feet tanks, respectively. The well is situated in the shed at the rear of the house and the cistern under the kitchen. The tanks and hot air engine are placed in the basement under the front part of the house. The distance from the well and cistern to the pump is 60 and 75 feet, respectively. The suction pipe from both sources of supply is fitted with a three-way cock, and likewise the discharge is similarly fitted, so that water may be drawn at will with the same power from either well or cistern and discharged into either hard or soft water tank. Such a system provides everything necessary in the way of a water supply for premises situated beyond the limits of a municipal service.

McKnight & Frost, Edmonton, Alta., are another firm who have been very successful in developing this branch of business. Several systems have been installed, the largest of which was in the Roman Catholic convent at Morinville, Alberta, where twin tanks were installed for hard water and soft water, power being supplied by a hot air engine. The wells are outside the building, and are covered with about six feet of earth, this keeping the pump pipes from freezing in the winter. The advantages of this system over the overhead tank are that there is no uncalled-for weight at the top of the building, and no tank to leak. The water being under air pressure is always kept cool and fresh, and it is not possible to be contaminated from dust or insects, as would be possible with an open tank. There is also not the same danger of freezing. The hot air pump is operated about three hours each day, and supplies water for nineteen fixtures. "Our customers are perfectly satisfied with the system, and think there is nothing like it," writes McKnight & Frost.

Send for Catalogues.

Manufacturers of engines and tanks are only too willing to assist plumbers by supplying catalogues and other information which will be helpful in securing business of this kind. It must be remembered, however, that the plumber must go after the trade by making a list of the farmers and summer residents in his neighborhood whom he considers are able to afford a water system. Then a systematic canvass should be made and the advantages placed before possible customers.

Development of the Modern Refrigerating Machine

An Interesting Review of the Principles of Refrigeration Made by H. D. Pownall Before a Meeting of Mechanical Engineers—Increasing Amount of Cold Storage Work in Which Piping is Done Makes This of Interest to Fitters.

The value of mechanical refrigeration in such institutions as hospitals, sanitariums, morgues and the saving of life and health by the more general distribution throughout the year of fresh, wholesome foods cannot be estimated in money value; neither can its worth in the iron and steel industries, in chemical industries nor in the added comfort to humanity be computed. Its incalculable influence in the improvement of manufacturing and social conditions is gradually lost from sight, inasmuch as its benefits come gradually and are unconsciously accepted.

There is probably no other branch of engineering less thoroughly understood than that of refrigeration, this being partially due to the lack of printed matter or text books relating to this subject. And the lack of printed information is in a measure attributable to the fact that it is a very costly procedure to secure accurate data relative to this science. In electricity or other lines of engineering, a complete unit may be easily tested for both efficiency and characteristics at a moderate cost before shipment. An accurate test could not be made upon a refrigerating plant of any size for less than $1,000, and the data secured from this test in the majority of cases would be applicable to the one plant only.

Up to the present time, notwithstanding the wonderful strides which have been made, the various engineering bodies have failed to reach any definite conclusion as to what shall constitute a standard tonnage basis; that is, to establish a definite unit of refrigeration. The various manufacturers of such machinery therefore rate their product according to their own judgment.

Principles of Refrigeration.

Mechanical refrigeration depends upon the now well-known fact that fluids in changing from a liquid to a gaseous state absorb heat, which, in turn, is given off on again resuming the liquid state. These different states are brought about by variation of pressure, due to the operation of a vapor pump (or compressor), which compresses or elevates the pressure of the gas to a point which will permit of its liquefaction. The heat produced by compression is removed by water flowing over or through a condenser, it being necessary to remove 1 B.t.u. in the condenser for each B.t.u. absorbed by the gas in evaporating, plus a slight addition due to the heat caused by compression and by friction of the gas in the piping system.

The liquid flows from the condenser to a receiver and from the receiver through a controlling valve erroneously called an expansion valve.

The pressure on the condensing side when using ammonia as a refrigerant varies from 125 to 200 lbs., dependent upon the size of the condenser and upon the temperature and amount of water available for condensing purposes. The liquid, during refrigeration, first flows as a liquid through the controlling valve, where its pressure is reduced from the condensing pressure of approximately 175 lbs. to that of the refrigerator, or about 15 lbs. The temperature of the liquid flowing to the controlling valve is about 90 deg. F. and after expansion is about 0 deg. F.

This reduction in the temperature of the liquid ammonia is caused by the evaporation of a portion of the liquid, which, owing to its latent heat, cools the balance of the liquid to the refrigerator temperature of 0 deg. Theoretically under the above condition about 18 p.c. of the liquid is converted into gas at this point in cooling the remaining volume to the temperature of the balance of the liquid in the refrigerator, the variation in the two pressures being controlled by the rate of flow through the liquid valve and by the removal of the resultant gas with the compressor.

The refrigerating fluid is contained in coils of piping or in cylindrical vessels, similar to return tubular boilers. In an ice-making system these coils or cylindrical vessels are immersed in a brine solution, this brine being caused to rapidly circulate around or through the piping system. The brine, being warmer than the ammonia, causes the latter to boil or evaporate. Ammonia boils at 29 deg. F. below zero at atmospheric pressure. During this process the refrigerating agent absorbs from the brine a certain amount of heat which is conveyed to the compressor, the resultant gas being again elevated in pressure to a point sufficiently high to permit re-liquefaction; thus a continuous cycle is formed, consisting of three functions, performed by the following parts of the equipment: 1, the compressor, 2, the condenser, 3 the evaporator.

It will be noted that the refrigerating fluid continually repasses through

all portions of the apparatus, which is, as far as practicable, hermetically sealed, the refrigerating medium being alternately evaporated and condensed. It takes up heat from the material to be chilled and transmits it to the water circulated over or through the condensing coils.

Refrigerating Agents.

Many different volatile fluids are adaptable as refrigerating agents, but those which have proven most practical are anhydrous ammonia and carbonic anhydride. Although the same principle underlies the use of all such fluids, their physical properties vary and consequently demand different treatment to produce the best results. In so far as the user is concerned, these differences result in the varying volume of fluid to be circulated and in the variation in condenser and refrigerator pressures peculiar to each individual agent. These conditions, in turn, determine the dimensions and strength of apparatus used. The chemical action of the various agents demands the use of somewhat different materials in the construction of the various parts of the equipment with which the fluid comes in contact. At the present time ammonia leads the list in popularity, and in fact, has almost superseded other refrigerating agents.

The ordinary working pressures of the ammonia compression or absorption system are from 15 lbs. on evaporating side to 220 lbs. on the condensing side, while that of carbonic anhydride is about 300 lbs. on the evaporating and from 950 to 1,250 lbs. on the condensing side. It may be safely asserted, however, that in the United States there are now 199 ammonia compression plants sold to each carbonic anhydride system.

Owing to the peculiarity of the ice-making and refrigerating business it is essential that nothing but highest grade material and workmanship be used in the construction of such plants. This is due to the fact that it is necessary that a refrigerating plant operate continuously 24 hours per day for periods of 4, 5 or 6 months without interruption. In no other branch of engineering is such severe demand made upon the machinery. Interruptions in most manufacturing establishments, caused by defective machinery or through carelessness, do not usually result in such serious consequences as interruptions in a refrigerating and ice-making plant.

If you make mistakes don't be mad when people ask you to correct them.

Make investments outside your business, if it seems wise to do so, but don't rob the business in order to do it.

Utilization of Waste Heat for Factory Heating

Description of an Interesting Installation Designed to Utilize Waste Heat in Winter and Carry Away Excessive Heat in Factory During the Summer.

Fuel bills for heating factory buildings are apt to appear more exorbitant to the manufacturer than an equal expenditure for power, which, to a certain extent, may be considered a more tangible product of fuel than mere heat. Many factories have some waste heat from their various manufacturing processes, which may be utilized for heating purposes. The question of how to economically use such heat is a problem which as a rule must be solved for each individual plant. However, the study of installations which have successfully utilized waste heat may often suggest features which may be applied advantageously to proposed heating plants.

The Massachusetts Fan Co., Watertown, Mass., which for years has made a particular study of heating problems, has recently installed an interesting plant of this character for the Universal Carbon Co., Ashland, Mass. This installation is designed to serve a twofold purpose; to utilize the waste heat from the carbonizing ovens to heat the buildings in winter; and to carry away the heat from the carbonizing room in the summer time.

The buildings consist of a one-storey section 280x51 feet, in one end of which is located the carbonizing room, 75 feet long, and a three-storey building 168 feet x 55 feet, forming an ell with the one-storey building. The total cubical contents are approximately 700,000 cu. ft., with about 33,500 sq. ft. of exterior wall surface.

There are eight furnaces in the carbonizing room, in which oil is burned, with insufficient air supply so as to make lamp black. The furnaces are approximately 5x8x5 feet high, and the tops are covered with fire brick. As the temperature in the furnaces is in the neighborhood of 1,500 deg. F., there is a considerable loss of heat by radiation. The Massachusetts Fan Co. undertook to utilize this heat and by their apparatus to secure a temperature of 70 degrees throughout the buildings in zero weather.

The method employed is as follows: Over each furnace was installed a galvanized iron hood 5 feet x 8 feet square, which can be raised or lowered as may best suit the conditions of operating. These hoods are connected by 16-in. ducts, equipped with dampers to the main flue leading to the inlet of a 100-in. full housed, top horizontal discharge blower, capable of delivering about 20,000 cu. ft. of air per minute. The fan is driven by a belt from a 10 h.p. 220-volt, three-phase, 60-cycle motor, running at 1,200 r.p.m.

The furnaces are arranged in pairs, and the 16-in collecting ducts enter the main flue. on opposite sides, there being 23 inches between the first and second sets, 32 inches between the second and third, 39 inches between the third and fourth sets, and 40 inches from these to the fan.

The distributing system consists of a 40-in. main duct of galvanized iron leading from the fan the full length of the one-storey building and to the second floor of the three-storey ell. Here three ducts branch off, 25-in. to the first floor, 26-in. to the second floor, and 23-in. to the top floor. The flues on each floor have 6-in., 8-in. and 10-in. outlets arranged to secure the desired distribution of heat, the main flues being reduced in size after each outlet.

A by-pass iss arranged so that any part of the heat may be taken from the furnaces and delivered out of doors when not wanted for heating the buildings.

SOME SOUTHERN SHOP RULES.

Some shops in the States make rules which they enforce, and here follows one schedule:

1. All employees must report at the shop, or at the job, ten minutes before commencing work; or reporting late the time will not begin until the next hour. Clean overalls, etc., must be provided every Monday morning.

2. Working noon hours or at any other irregular times is not permitted except by special permission.

3. Every employee must keep their time report accurately, and have the same in the office by 6 o'clock Friday evening.

4. Positively no money advanced during the week.

5. Smoking, chewing or drinking and the use of boisterous and vulgar language are strictly prohibited.

6. Employees will be held responsible for tools and stock. If either be misused or lost their value will be withheld from wages.

7. Any damage done by employees to tools, work, materials or building where work is being done will be deducted from the wages.

8. No employee is permitted to give away, sell, loan or remove any tools or material whatever from the shop or jobs, except all shall be properly taken care of.

MILK-COLORED WATER

Editor Plumber and Steamfitter,—At different times and places I have noticed that when the water is drawn from the faucet that it is almost the color of milk. Will you be kind enough to explain the matter?

Hamilton, July 25. N. O. H.

This appearance of the water is probably caused by air which may have been confined in the water under pressure in the pipes. When the water is drawn the air has a chance to escape. If you will allow the water to stand for a little time you will see that it is perfectly clear and the milky color has disappeared.—D. H. C.

PURIFYING SOLDER.

Editor Plumber and Steamfitter,—I would like to know what I can do to make the wiping solder wipe easier? Will you please tell me in the next issue of the paper? BEGINNER.

Montreal, July 22.

Perhaps you have not got the solder properly adjusted. If you have undertaken to mix the solder for yourself you will probably have a good deal of trouble and we recommend that you obtain a supply from some good jobber as you will find it more reliable and cheaper in the long run. In case it does not work well then perhaps the fault is your want of skill, which may disappear with practice. If you are satisfied that this is not the case you can purify the solder by heating it to a dull red heat and throw in some sulphur. This will bring the impurities to the surface from whence they may be skimmed off. Before the solder is entirely cold a small amount of tallow should be stirred in for the purpose of removing the sulphur. While you are cleaning the solder you should stir it constantly in order to bring all of it in contact with the substances you are using as purifiers.—D. H. C.

ADJUSTING HEAT BY AIR VALVES

Editor Plumber and Steamfitter,—I see so many good points among your questions and answers from time to time, that I am going to ask one for myself and that is, can you tell me if there is any way in which an ordinary low pressure gravity steam job can be run so that some of the rooms will not get too hot during the early fall and late spring weather?

Winnipeg, July 23. I. O. P.

There are "Heat Regulators" upon the market which will accomplish this matter with the utmost perfection and we would recommend you to try one in this case. However, if you can not bring your customer (we assume that you are asking for the benefit of one as well as yourself) to purchase such an apparatus, you can at least sell him sufficient first-class air valves (automatic) and proceed as follows: Get up steam, first setting down tight all the air valves. Now go around and open the air valves a bit, just enough so that two or three loops on each radiator will heat, closing the air valve when that result is attained. Do this with all the radiators. The radiators nearest to the boiler will have to be closed a trifle tighter than those that are farther away. It is possible to so adjust good reliable automatic air valves that the resulting amount of heat attained may be greater or less as may be desired. A little time and patience, merely, are required of the steamfitter.—D. H. C.

SYSTEM IN CONN'S SHOP.

C. W. Conn, Tillsonburg, has supplied three forms which he uses to keep track of his repair and contract orders.

Date.. April 5/10

Name.. John Jones

Promised .... 1 p m

REPAIRS	CHARGES
Repair Teakettle.	
Amount due	$

Fig. 1.—Repair Tag.

Fig. 1 shows a repair tag, and on every piece of repairing that comes in one of

Stock and Job Sheet

Article or Job. 2 doz 12 qt Flaring Pails

Mechanic Wm Jones Date April 10, 1910

	Material	Price Cost	Price Sell
24	Sheets IX Tin 20x28	2/6	
4	lbs Blk wire	11	
2	doz 1/2" S Ears	17	
2	— Rail Nails	05	
2	lb Solder	38	
	Rivets & Twine	10	

these tags is tied, properly filled out. The mechanic puts on the tag the material used and time spent in the job, and Mr. Conn or his clerk puts on the price. He finds this an excellent idea.

The stock and job sheet shown in Fig. 2 is kept in the workshop till the job is completed and filled in by the mechanic each day and checked off from the time card every morning. When the job is completed it is brought to the office and I fill in the price of material and time, which gives me the net cost of the article. This is a very convenient way of keeping track of the exact cost of every article made up in the workshop. This sheet is also used for small job work, where the job is not completed the same day it was started.

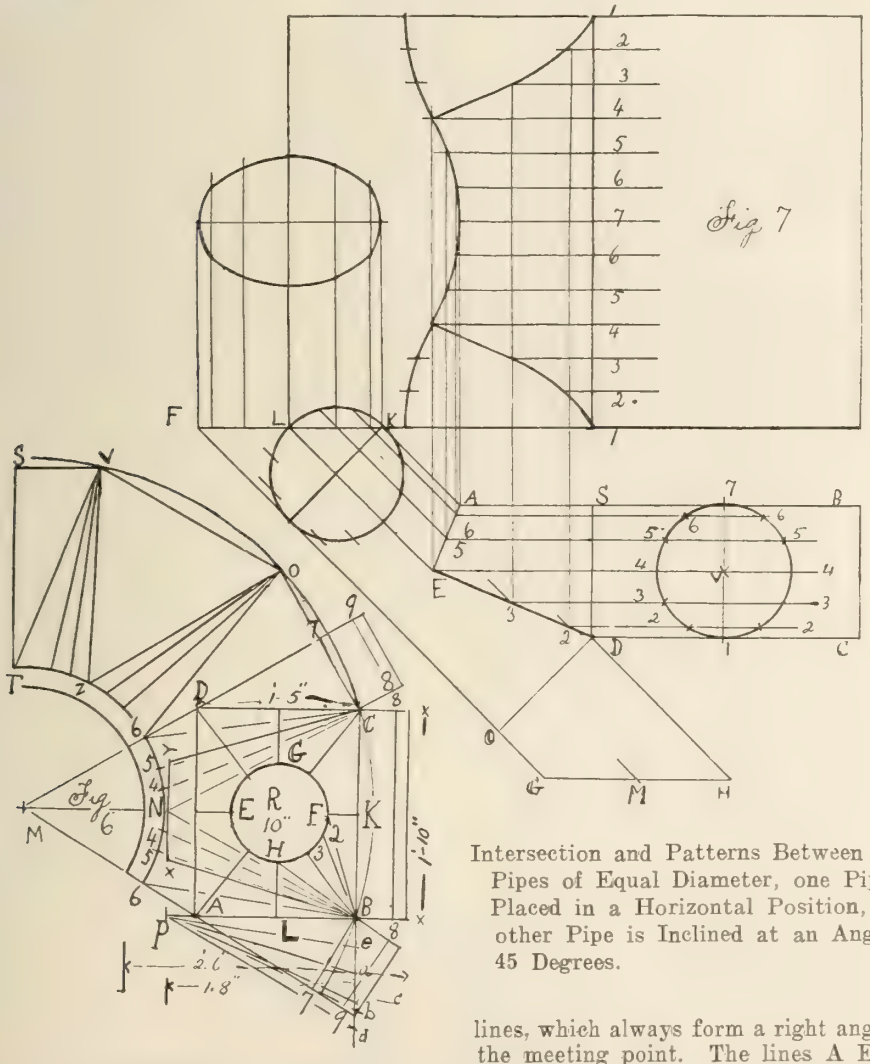
Fig. 3 is a sheet used for keeping track of the cost of job work. When a plumbing job is started the mechanic writes down every article he takes to the job, also filling in the time each day spent in same. Likewise, he sees that his helper's time is also down, and when the job is completed all material returned is checked off and marked in column headed "Retd." opposite the article. This makes a very convenient and quick way of keeping track of the exact cost of every job done, which is an absolute necessity.

Cutting Patterns in the Tin Shop

Readers of Plumber and Steamfiitter are Requested to Make Use of This Department—Questions Regarding Patterns Will be Answered by Experts—Discussion is Also Invited on Any Matter Pertaining to the Tin Shop.

INTERSECTIONS BETWEEN PIPES.

To procure the required form of the intersection and obtain the patterns, writes James P. Coleman, in the Hardware Bulletin, proceed as follows:



Intersection and Patterns Between Two Pipes of Equal Diameter, one Pipe is Placed in a Horizontal Position, the other Pipe is Inclined at an Angle of 45 Degrees.

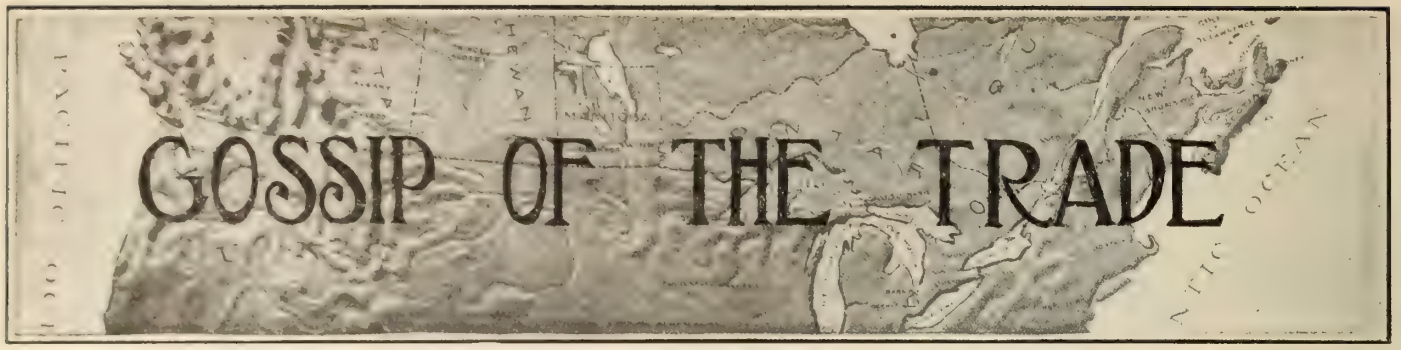
Draw the elevation of the horizontal pipe A B C D E, and the elevation of the inclined pipe F K G H. The straight lines A E D show the form of the intersection. In all intersections between the pipes of equal diameter, the form of the intersection is indicated by straight lines, which always form a right angle at the meeting point. The lines A E and E D form a right angle at E. At point V in the centre of the horizontal pipe, describe a circle to show a right section through the pipe. Draw the line E V and draw a line perpendicular to D C passing through the centre point V.

Having drawn the circle in the horizontal pipe, keep the dividers set, place one point at the top extreme point of the vertical diameter and intersect the circle in two points marked 5-5. Set one point of dividers at the lower extreme point of vertical diameter, intersect the circle in two points marked 3-3; set the point of the dividers at the extreme of the horizontal diameter, intersect the circle in points 2 and 6 twice. Mark the extreme points of the horizontal diameter 4-4, the top of the vertical diameter 7, the lower point 1. At point D draw an outstretch line perpendicular to D C; and on the outstretch line lay off spaces equal to the distances between the points of division shown on the circle of horizontal pipe indicated by the numbers 1, 2, 3, 4, 5, 6; 7, 6, 5, 4, 3, 2. Mark the points in the pattern as shown point 7 at the centre, point 1 being the extreme point at each end. Through the points on the outstretch line draw perpendiculars, forming a pattern sheet.

Through the points of division shown on the circle of the horizontal pipe, draw horizontal lines parallel to A B, intersecting the mitre lines D E A, in points 2, 3, 5, 6. Place a tee-square at end of drawing board and through each point of intersection draw a line intersecting the lines in pattern sheet. The line through D intersects line 1-1 in pattern; line through 2 intersects line 2-2 in pattern; line through 3 intersects line 3-3 in pattern; line through E intersects line 4-4 in pattern; line through 5 intersects line 5-5 in pattern; line through 6 intersects line 6-6 in pattern; line through A intersects line 7 in pattern.

Draw lines connecting the points giving the required form of the pattern. If a tee-square is not used, you can use the dividers by measuring from line B-S to the respective points in the mitre line, and spacing the distances from the outstretched line on the corresponding lines in the pattern sheet.

The opening in the inclined is found by measuring from line D-O in inclined pipe, to points of intersection—2, 3, E. 5, 6, A, and spacing those respective distances from the outstretch line on lines 2, 3, 4, on each outside quarter of the pattern sheet as shown. Lines drawn connecting the points give the required form of the pattern. The inclined pipe can be used as an ash-pipe, the horizontal pipe as the outlet to dump the ashes in. The oval shape in pattern is found by drawing lines through the points of division in the circle of the inclined pipe to intersect line F K in points, then draw indefinite perpendiculars through the points. Measure from the centre line of the circle to the points of division and space those distances from the line drawn through point 7 in pattern sheet, on each corresponding indefinite line.



A. E. Donovan, plumber, Halifax, has assigned to G. E. Faulkner.

The Owen Sound Gas Company are offering special inducements to customers who begin using gas for cooking in July. Christie Bros. have two windows devoted to gas goods and are advertising them extensively.

J. E. Gray has been given the contract for installing a heating plant in Agnes Street police station, Toronto, at $892, and Gentle & Travis will do a similar job at Yorkville Avenue fire hall, Toronto, for $1,170.

George Chapple, master plumber, of Grand Forks, B.C., is going out of business and expects to locate in Spokane, Wash. Geo. W. Cooper, who has been with Mr. Chapple for some time, and who is an old-timer in Grand Forks, is taking over the business.

Higgins & Willoughby, Regina, have been awarded the contract for the sheet metal work in connection with the University Buildings at Saskatoon, the contract being for $30,000. They also have the sheet metal work on the new Parliament Buildings at Regina, which is for $40,000.

Contracts for the new 8-room school at Dresden have been let, the tender of the Blonde Lumber Co., Chatham, being accepted at $12,071. Well & Wells, Dresden, have the contract for roofing and Carscallen & Son, Dresden, secure the heating and ventilating contract at $850.

The Northwest district convention of the United Association of Journeymen Plumbers and Steamfitters has been in convention in Vancouver. Delegates were present from practically every industrial centre in the jurisdiction, including Butte, Portland, Spokane, Bellingham, Seattle, Tacoma and other cities.

R. W. Robson, 99 Westmoreland Ave., Toronto, is hitting the high spots with a fine new automobile. It will come handy during the convention days during the last week in August.

MAKING PROGRESS AT LONDON.

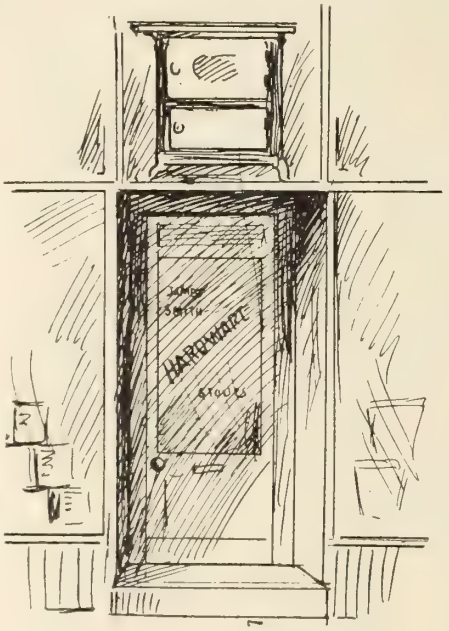
City Architect Nutter, London, has made a report, which recommends that all plumbing in the City of London be inspected, tested and duly regulated. This is under consideration, and if acted upon will mean the appointment of a plumbing inspector and the licensing of master plumbers and journeymen plumbers.

This is an outcome of requests made a few weeks ago of the committee by representatives of the local plumbers' union, who declared that plumbing in London was frequently "scamped" and never inspected.

Mr. Nutter has been at work on his report for some time, and has communicated with numerous cities and authorities on the matter, as a result of which he says London is the only place of any consequence which has not a plumbing by-law.

NOVEL MEANS OF DISPLAY.

Maxwell & Johnson, plumbers and steamfitters, 353 Queen Street west, Toronto, utilize the space above the entrance to their store for the display of a gas range as shown in the accompanying sketch. The space in front of the fan light over the door would be wasted in any case and by their plan they have a permanent display which is lighted up at night and draws attention to the stock of gas ranges.



Display Above Doorway.

This form of utilizing the window for a double display has been adopted by J. L. Vokes & Sons, 68 King street west, and in the fine new store of the Gurney Oxford Stove & Furnace Co., 740 Yonge street, in both of these cases, however, the double display being carried across the whole store front. The Vokes windows are utilized to display fireplaces, mantels and refrigerators, while the Gurney display is confined to various styles of stoves and ranges.

Purdy & Mansell, master plumbers, 63 Albert street, also have a double display, enamelware, etc., being shown in the usual window space, while small wares such as brass goods, fittings, etc., are shown on a platform constructed inside the basement at about sidewalk level.

Westwood Bros., hardware and stove merchants, 633 Queen street west, make a specialty of gas ranges and adopt a novel means to attract the attention of customers to their leader in this line. Inside the door they have a man's glove stuffed to resemble a hand, the hand and a sign, "There it is," pointing at a gas range connected up for demonstration purposes. The hand is weighted and attached to the door by the two cords on pulleys. When the door opens the hand lowers and confronts the customer, drawing his attention to the range and giving the salesman an excuse to start talking gas ranges. When the door is closed the hand is out of the way.

AMHERST FOUNDRY'S NEW CATALOGUE.

The Amherst Foundry Co., of Amherst, N. S., have just issued their fourth annual catalogue. The 1910 edition is lettered "D," and it is the most comprehensive of any yet published by the company. The catalogue is divided into three sections. The first part is devoted to baths; the second to porcelain enamelled lavatories; and the third to laundry tubs, flat and roll rim sinks, sink backs, drain boards, range closets, hoppers, traps, etc. The catalogue thus takes in the full line of "Beaver Brand" porcelain enamelled sanitary ware.

Having during the past five years (when "Beaver Brand" enamelware was first placed on the market) become established with a line of goods noted for purity of enamel, quality of material, uniqueness of design, and skilfulness of workmanship, the company is prepared

to go after the trade and assure customers they are making no experiment in using "Beaver Brand" goods, which are guaranteed by the makers.

The catalogue is printed on glazed paper and copiously illustrated, and it is so arranged that the plumber proposing to use these goods, may proceed with his work having before him only the illustrations and his roughing-in measurements.

SALESMEN'S CONFERENCE.

With the idea of getting into the closest possible touch with its salesmen and department heads, the Wolverine Brass Co., Grand Rapids, of which the Canadian Wolverine Co., of this city, is the Canadian branch, annually holds an agents' confrence. This year's conference was held at the head office, Grand Rapids, commencing on July 12. Three days were devoted to business sessions, at which the past year's business was reviewed, talks were given on the handling of the coming year's business, new lines to be handled were introduced and discussed, and classes in salesmanship were held. Selling problems were brought up and improved methods outlined, the company making it a rule to give the salesmen and others present all the time they want for a thorough and comprehensive discussion of the questions which all members of the staff are urged and encouraged to bring up.

After three days of business, Friday was devoted to a jolly outing at Whitefish Lake, 25 miles north of Grand Rapids, where L. A. and H. C. Cornelius, president and secretary of the Chatham company, have their summer cottages, and where they entertained the entire party. Sports of all kinds, including ball games, swimming, sack and foot races and other diversions, were indulged in. There were 44 delegates at the convention, the Ontario delegation comprising A. S. Lamond, C. S. Cornelius, Chatham; C. H. Bakemeyer, Toronto, and J. J. Glenister, London. The company has found these conferences a great success, since they result in more uniform work and greater enthusiasm on the part of the salesmen.

While at the conference Jim Glenister told a good story on himself, but those who know Mrs. G. won't believe the part of it that intimates that she doesn't know how to cash a cheque—when she gets one.

According to Jim, Mrs. G. went to the bank to get a cheque cashed and the teller, a new man on the job, told her she would have to be identified.

"Identified?" repeated the lady, "what does that mean? Isn't the cheque good?"

The bank man did not smile, for this was the seventh lady who had asked this question that day.

"I have no doubt it is," he said, "but I don't know you. Do you know anybody in the bank?"

"Why, I'm Mrs. Glenister! Don't you see my name on the cheque? See—here it is." The teller shook his head wearily.

"You must be identified," he insisted. "You must bring somebody who knows you." The lady drew herself up.

"That cheque," she said with dignity, "was given me by my husband. There's his name on it. Do you know him?"

"I do," said the teller, "but I don't know you."

"Then," said the lady, "I'll show you who I am. My husband is a short, stout man with lightish hair. His face is smooth-shaven. He has a mole on one cheek and looks something like a gorilla, some people say, but I don't thing so. When he talks he twists his mouth to one side, and one of his front teeth is missing. He wears a No. 15 collar, a No. 6 shoe, and won't keep his coat buttoned. He's the hardest man to get money out of you ever saw—it took me three days to get this check."

The banker waved his hand. "I guess it's all right," he said; "put your name right there—no, on the back, not the face."

CLOSET SEAT AND CHAIR.

Much has been said and written about the equipment of the Blackstone Hotel, Chicago, much care and thought having been taken on the furnishing of this fashionable hostelry.

One feature is an ingenious combination of closet-seat and dressing chair for a bath-room. The desirability of a chair in any bath room is self-evident and we do not know any instance to which utility and beauty of construction are combined to better advantage than is shown in this chair.

It is simply a chair with a double seat in which the upper one of cane-trips is hinged to the back and acts as a cover for the lower seat. The chair rests over the closet-bowl and practically hides it. The entire chair is of solid mahogony, being the work of the Never-Split Seat Co., Evansville, Ind.

This is but a single item of the lavish but sensible equipment of the Blackstone, and no doubt the use of the chairs will soon become general, not only in hotels but in the private homes of the country.

NEW GAS MANTLES.

Two new mantles for inverted gas lamps are on the market, and should be popular sellers this fall. One is a United States invention, the mantle being a double one, with the cords of the mesh running in opposite directions. It is claimed for this mantle that it is doubly strong. The other is called the "Swiss" mantle, being the invention of a native of Switzerland. It is made of silk instead of cotton fibre, and has a number of asbestos cords running through it. It is said to be capable of giving double the lighting power, and the asbestos cord gives it strength to withstand the explosion made when lighting the gas, thus giving it longer life.

Coal oil lighting also presents some new features. There is the settler's lamp, which, while not new this season, has but lately caught on. The oil bowl is circular and horizontal in shape. Being made of stamped tin, it is a cheap lamp, with nothing breakable about it, except the chimney, and that is small and held firmly in place. Then there are several street, stable and wagon lanterns of cold blast make, which Canadian manufacturers are offering this season for the first time to the trade, most of them with particularly good features, such as improved lifts and wire guards, automatic handles, enlarged air chambers, solid draft tubes, etc.

PERFECT GAS CONTROLLER.

Westwood Bros., 633-637 Queen St. West, Toronto, have secured the exclusive agency for Canada of a new gas controller which works automatically and needs no attention when once fitted to the gas line and adjusted. It allows just enough gas to pass through it to supply the needs of as few, or as many burners as are desired at any one time. It is guaranteed to effect a saving of 15 per cent., and in many cases it will easily reduce gas bills one-half. The Canadian Gas Users' Association, by whom the controller will be marketed in Canada, will sell through dealers in cities and towns where gas is used. This should prove an excellent proposition for any dealer, and descriptive printed matter should be written for by those interested.

New building permits at Toronto include: Dr. Temple, dwelling, $10,000; R. C. Bustard, 3 dwellings, $12,000; Hayes and Caldwell, 2 pairs dwellings, $8,000; W. J. Brown, 2 detached dwellings, $7,000; Barton & Tucker, 3 detached dwellings, $6,000; R. S. Hambleton, pair semi-detached dwellings, $5,000; and C. A. Davies, dwelling, $9,000.

A new six-storey office building will be erected at Montreal by Carl Rosenberg.

New Buildings, Water and Sewerage Systems

Opportunities Offered by Municipalities and Private Enterprise for New Plumbing, Heating, Ventilating or Sanitary Systems—Work Being Undertaken in Every Section of the Dominion.

Municipal Undertakings.

A sewer by-law to raise $50,000 will be submitted shortly to the Victoria ratepayers.

A new building will be erected by the Notre Dame hospital authorities at Montreal.

The by-law to raise $25,000 for the water system at Nanaimo, B.C. improvement was carried.

The by-law to raise $27,000 for the extension of water system at Revelstoke, B.C., was carried.

The contract for the new hospital at Camrose, Alta., has been awarded to Keyes and Baird.

C. T. Perry has prepared plans for St. James Church, Vancouver. Estimated cost, $100,000.

A by-law will be submitted to the Prince Albert, Sask., ratepayers for a new $12,000 filtration plant.

The contract for the laying of the sewers in Wingham, Ont., was awarded to Pidgeon and Reid, Stratford.

A new nurses' home will be erected at Prince Albert, also $5,000 will be spent in improvements to hospital.

The contract for the erection of the school at Wainwright, Alta., was awarded to P. D. Laird and Son, at $15,000.

Tenders for the construction of the new Royal Columbian hospital, at New Westminster, will be called for shortly.

Preliminary steps for the establishment of a water and sewerage system are under way at Montreal South, Que.

The contract for the sixth section of Sherbrooke Street sewer, Montreal, was awarded to Keegan & Dillon for $68,768.

Adam Reid, Watrous, Sask., was awarded the contract for the erection of the Manitou Lake Sanatorium, at $50,000.

O. Villeneuve has been awarded the general contract for the erection of St. Jean Berchmans Chapel and school at Montreal.

The by-law to raise $60,000 to increase the capacity of the waterworks at Welland was defeated; that for $13,000 for sewer carried.

An addition will be made to the Victoria University, Toronto. The new building will be known as the Burwash residence, and will cost $230,000.

A by-law to raise $45,000, the amount estimated for the new isolation hospital at Victoria, recommended by the city council, will be submitted shortly.

A $48,000 by-law for the extension of the pipes of the waterworks and sewerage system at Strathcona, Alta., will be submitted to the ratepayers on July 30.

Tenders addressed to G. W. Bilbrough, secretary-treasurer, Swift Current, Sask., will be received until August 2 for the following: Laying sewer and water mains, constructing sewage disposal [illegible].

The board of governors of Acadia University, St. John, N.B., are making arrangements to raise $150,000 to be known as the seventy-fifth anniversary fund. John D. Rockefeller has offered $50,000 if the $150,000 be raised by June 1, 1911.

The contract for instalation of water system at Grand Falls, N.B., has been awarded to Powers & Brewer, contractors, and embraces furnishing and laying 20,000 feet of cast iron pipe, reservoir, pumping station and pump.

Public Buildings.

A collegiate institute will be erected at Virden, Man.

A new municipal hall will be erected at St. Charles, Man.

A new Children's Shelter will be erected at Brantford.

A new $40,000 Carnegie library will be erected at Regina.

A new girls' school is being erected at Caughnawaga, Que.

A $12,600 addition will be built to the general hospital, Ottawa.

The Presbyterians will erect an institutional church at Stewart, B.C.

The Knights of Columbus will erect a hall at Chatham, to cost $25,000.

The Reformed Presbyterians will erect a new edifice at Toronto, to cost $12,000.

A new Sunday school hall will be erected by the Chester Baptist church, Toronto.

Tenders are being received for the erection of a school house at Clovedale, B.C.

The Calgary ratepayers will vote on a by-law to raise $61,000 for exhibition buildings.

The contract for the municipal buildings at Waskada, Man., was awarded to D. McLean.

Tenders are being called until August 8 for the erection of brick school house at Enfield, Ont.

The Ontario Government will erect a residence for the Agricultural College at Guelph, Ont.

The Toronto Board of Education will spend $24,000 in alterations to the York Street public school.

A new edifice will be erected by the St. Barnabas church congregation, Toronto, to cost $12,000.

The Catholic school commissioners of St. Paul Ward, Montreal, have decided to build two new schools.

Over $12,000 will be expended on the new public school at Gretna, Man., for which tenders have been called.

The congregation of the Sixth Avenue Methodist church, New Westminster, will erect a new edifice, to cost $10,000.

W. King, of Revelstoke, is preparing plans for the new provincial public buildings for both Grand Forks and Kaslo, B.C.

T. J. Brocklebank, Melville, Sask., was awarded the contract for the new school at North Battleford, Sask., to cost $13,700.

Plans have been prepared and tenders are being received for the erection of Anglican College for University of Saskatchewan, at Saskatoon, and also for principal's residence in connection therewith.

A new public school will be erected at North Toronto.

A $20,000 by-law for the reconstruction of the city hall at Brandon was carried.

A building to combine threatre and hotel will be built at Prince Albert to cost $35,000.

W. A. Cryderman is the contractor for the $50,000 government building at Vernon, B.C.

The Catholic Board of School Commissioners will erect two new schools at Rosemount, Que.

The erection of a modern tuberculosis sanitarium for Waterloo County is under consideration at Berlin.

The contract for the erection of the new public school at Renfrew has been awarded to M. J. O'Brien, at $32,000.

The Belleville City Council granted the request of the Board of Education for $30,000 for the erection of a new school.

The Sisters of St. Joseph will erect a Community House in connection with their House of Providence at Toronto. The new building will cost $50,000.

General Buildings.

Dr. Temple is erecting a $10,000 dwelling at Toronto.

Fred Mauthie will build a new hotel at Toronto to cost $,17,500.

Gray Bros. will build a business block at Vancouver, to cost $56,000.

George Meech will build a $16,000 apartment house at Toronto.

C. P. Custafson will build a $45,000 rooming house at Vancouver.

The Canadian Bank of Commerce will erect a branch at Ponoka, Alta.

H. Browning will build an apartment block at Winnipeg, to cost $15,000.

J. Gibson is erecting 9 pairs of two-storey dwellings at Toronto, to cost $32,000.

D. Burns is having plans prepared for a new brick block on Pender street, Vancouver.

The British Columbia Electric Railway Co. will erect a $250,000 block at Vancouver.

The Dominion Bond and Trust Co. will build a business block at Vancouver, to cost $500,000.

The contract for the erection of the Dominion Express Company's building at Montreal has been awarded to Peter Lyall & Sons, to cost $700,000.

Recent building permits at Winnipeg include:— W. A. Wilkie, two houses, $5,800; A. C. Ewart, residence, $15,000; Dr. Galloway, addition to house, $6,000; Ed. Noe, four houses, $12,000.

It is a good thing to have plenty of sand, but don't let it get into your gear box. It will stop the wheels of your business if you do.

PLUMBING AND HEATING MARKETS

MONTREAL.

July 30.—Good movement characterizes all lines of plumbing and heating supplies. Orders are very steady showing that the consumptive demand is evenly distributed and that stocks are low. The trouble between the brick layers and the local contractors is lasting longer than was expected. The smaller contractors have given in to the men, but the larger interests are holding out, with the result that some of the big buildings are being kept back. It is to be hoped that a settlement will soon be arrived at, or the plumbing industry will suffer.

Soil pipe is still on the scarce side, and the boiler and radiator men are hard at work keeping up with orders. Enamelware, too, is very active. Solder continues to show good movement.

The list price of water pipe was advanced 1c last week, steam radiators are a shade weaker. Otherwise the market is unchanged, and prices on the whole are well kept.

Soil Pipe.—There is no let up in the demand, and makers are more than ever pressed to supply requirements. The orders are not only numerous but they are individually heavy. The market is firm, and we quote light 60 off, heavy 70 and 10.

Lead Pipe.—There was an advance last week of 1c in the list price of waste lead. The other lines are unchanged. Trade is active, and the advance in waste is not anticipated to check the demand as there is little stock in users' hands. We quote: Pipe and waste at 30 off; traps and bends, 50; calking lead, 5c per lb.

Solder.—Solder is unchanged under a strong demand. Users are buying confidently and putting in stocks. We quote half and half 20c; wiping 18½c.

Iron Pipe.—The demand shows improvement, probably in view of the anticipated higher prices. The country demand is especially good. We quote: ¼-in black, 63; galvanized, 48; ⅜-in. black, 59; galvanized, 44; ½-in. black, 69; galvanized, 59; ⅜ to 4-in. black, 71½; galvanized, 61½.

Radiators and Boilers. — Excellent trade is reported with every prospect of a continuance of the heavy business. Boilers and radiators are now going in as fast they can be delivered. The market is firm with the exception of a slight easing in steam radiators. We quote: Steam boilers, 60 and 5; round hot water boilers, 50 and 10; wall and hot water radiators, 50 and 7½; steam radiators, 50 and 7½ and 2½ per cent.

Scrap Metal. — The buying is quiet with little scrap offering. Prices are unchanged. We quote: Heavy copper wire, 11½c; light copper bottoms, 10c; heavy red brass, 10c; heavy yellow brass, 8c; light brass, 6¼c; tea lead, 2½c; heavy lead, 2¾c; scrap zinc, 3c; cast iron, $16.

Metals. — Copper is still very weak, but for ordinary lots has not been cut. The other metals are unchanged. We quote: Tin, 35c; copper, 13½c; imported lead, $3.75; domestic lead, $3.60.

TORONTO.

July 30.—Trade in Toronto has been very good during the past month or two and many jobs have been advanced far enough to have plumbing fixtures installed. Other contracts taken later in the spring are still in the roughing-in shape. The heating business has improved materially and a good many jobs are nearing completion, the outlook for the fall too, is very bright.

Jobbing houses report a great deal of difficulty in making the shipments to points which cannot be reached by Canadian Pacific and even to these places difficulty is being experienced owing to this road having more than it can conveniently handle. The freight boats have not relieved the situation very much there being such a quantity of freight offered that dozens of shipments have been left standing for days without being handled. For instance, an Oshawa factory required some pipe, valves, and fittings, about a week ago and being unable to ship by the Grand Trunk, the supply houses sent the shipment to the wharf at Toronto, where it lay about a week until finally the factory had to close down and send a wagon 34 miles to Toronto to carry the material back. The Standard Ideal Company have also been held up, they having been dependent upon the Grand Trunk for shipping out to Port Hope. Some freight has been accepted by the boats but as a rule the cargoes have been full before reaching Port Hope, consequently great difficulty has been encountered in making shipments to Toronto and other points. The Amherst Foundry Company and Standard Sanitary Company have also had difficulty in bringing in supplies and every manufacturer and supply house has had trouble in shipping goods to customers.

Enamelware.—Demand is very brisk in all parts of the province. Many jobs have been held up owing to delay in securing shipments on account of the strike of train men on the Grand Trunk. No changes in prices are reported.

Soil Pipe.—There has been a good call for the most used sizes. Stocks are plentiful and prices unchanged. Light pipe is quoted at 60 and 10. Medium and heavy at 70 and 10, and 7 and 8 inch sizes, 50 per cent. Fittings are unchanged at 70 and 10 off.

Iron Pipe and Fittings.—No advance has yet been made although there is talk of higher prices. Demand is particularly good for the smaller sizes of pipe. Stocks are large enough to fill requirements. Prices are unchanged. Discounts on malleable fittings range from 37½ to 40 pc. with cast iron fittings from 60 to 65 off. Bushings standard, are 70, and malleable are 65 p.c. Nipples are 75 and 10; headers, 60, and flanged and malleable-lipped unions, 65 p.c. Galvanized pipe is $6.35 and black pipe $4.70 per hundred feet, 1 inch size.

Lead Pipe.—A nominal demand is reported, prices being held firm at 30 per cent. off. Traps and bends are quoted at 50 per cent., calking lead is unchanged at 4½c per lb. As stated a fortnight ago lead waste is now 9c. a lb.

Solder.—Prices are unchanged at 17 to 18 for wiping and 18½ to 19 for half and half. Supplies are plentiful and demand fair.

Brass Goods.—There has been a heavy call for all kinds of plumber's brass goods and the finishing up work now being done in many residences is increasing the demand. Manufacturers are therefore having all they can do to keep the trade supplied. We make no change in prices quoted.

Boilers and Radiators.—The number of installations being made is increasing and there are also a larger number of contracts being figured on. Manufacturers are holding prices firm, but master plumbers are reported to be doing work at only a very small margin above cost of material and labor. Discounts continue at 50 and 10 for hot water boilers and radiators with 2½ more quoted off steam radiators.

Metals.—Prices are as follows:— Copper, $13.25; and domestic lead, $3.75; scrap lead is worth 2½c; zinc, 3½c, iron, ½c and copper 9c per lb.

NOVEL SANITARY CUSPIDOR.

Jacob Meyerhoff, 1319 Wabansia Ave., Chicago, has secured a patent on a sanitary cuspidor the rights to manufacture which he desires to sell. His idea is a novel one—a cuspidor sunken in the floor connected to a pipe below the floor in which there is a stream of running water, the discharge being carried away instead of being allowed to stand. His idea is that the system could be installed in office buildings, etc., a row of the sunken cuspidors being set in front of a row of closets. They would have the advantage of being readily flushed out.

Condensed or "Want" Ads.

BUSINESS FOR SALE.

EXCELLENT OPENING for plumber and tinsmith. Also small stock hardware, $2,000. Good building, centre of town, 2,000 population, good farming district, plate front. Good opportunity for good tradesman in tin or plumbing. Stock at reasonable figure on dollar. Will sell or rent building. Apply to R. A. SCOTT, Alliston, Ont. (19)

PLUMBING and Tinsmithing business for sale in Quebec Province. Splendid opportunity for man speaking both French and English. Stock about two thousand dollars, consisting of stoves, ranges, paints and oils, galvanized iron, enamelware. Owner desires to retire from business. Box 1014, PLUMBER AND STEAMFITTER, Toronto.

SITUATION VACANT.

WANTED—By a plumbing supply house, first-class salesman, familiar with high grade plumbing fixtures and competent to handle and interest architects. Box 10, PLUMBER AND STEAMFITTER, 511 Union Bank Building, Winnipeg. (15)

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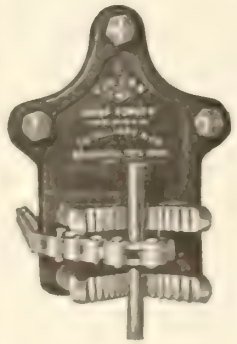

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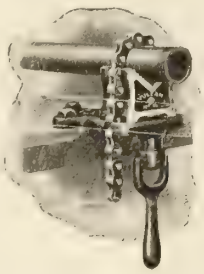

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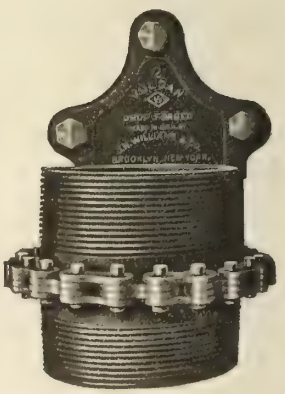

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Plumber and Steamfitter receives, from time to time, enquiries for the names of manufacturers of various lines. These enquiries come from firms who usually intimate they have looked through Plumber and Stamfitter but cannot find any firm advertising the line in question. In many cases these firms are anxious to secure the information at once. This page enables manufacturers to keep constantly before the trade lines which it would not pay to advertise in larger space.

ELECTRIC DRY BATTERIES.

X CELLS are the only Dry Cells which show NINE LIVES.

You'll make money in handling them. All standard sizes.

Electrical Specialties, Limited
TORONTO

EMERY WHEELS.

Canadian Hart Wheels
442 Barton St. East, Hamilton

Corundum and Emery Wheels Grinding Machines, Beaver Oil Stones.

FILTERS.

Anti-Splash Tap Filters
The "Galvo" Filter and Water Steriliser
"Perfection" Fire Extinguishers
There's good money in them for hardware dealers.
Write for Prices.
The Anti-Splash Filter Co.
OWEN SOUND - - ONTARIO

MANUFACTURERS' AGENTS.

The Manufacturers Sales Co.
MONTREAL
Frederick H. Reid, Manager
Representing manufacturers of high-class specialties, including "Handibook," "So-Clean," and others.
We are open at any time to receive propositions from first-class manufacturers who wish to be represented in Canada. Write at once. Best of references.

CLARE, LITTLE & CO.
WESTERN DISTRIBUTORS
Wholesale Commission Merchants and Manufacturers' Agents. Cars Distributed, Warehoused and Forwarded. Warehouse on Transfer Track. Business solicited.
OUR POSITION IS YOUR OPPORTUNITY
SASKATOON, WESTERN CANADA

METAL PRODUCTS.

Established 1880
NEITHER FICTITIOUS NOR EXORBITANT
ORDER AND USE
LANGWELL'S BABBITT
GEORGE LANGWELL & SON, Makers, MONTREAL

Will Hold Up a Shelf
That's what a shelf bracket's for. For this purpose there can be NOTHING BETTER, NOTHING CHEAPER than the BRADLEY STEEL BRACKET. It is well Japanned, Strong and Light. The saving on freight is a good profit aside from the lower price at which the goods are sold. Order direct or through your jobbers.
ATLAS MFG. CO., NEW HAVEN

BRONZE POWDERS

BRONZE LIQUIDS

The Canadian Bronze Powder Works
Montreal Toronto
Works, Valleyfield

Send us your orders and we guarantee the quality

When writing advertisers kindly mention having seen the advertisement in this paper.

"Always Reliable"
Gasoline Combination Blow Torches
(Patent Applied for)
furnished with our adjustable soldering iron holders which can easily be removed when not required, and has and advantage over old style stationary kind which are often in the way. Also has our "never leak" pump, plunger of which screws down. Made in two sizes, pints and quarts, with or without the soldering iron holded either round or flat shaped tanks. Can be obtained from any jobbing house in Canada.
OTTO BERNZ, 13th St, Newark, N.J.

VENTILATORS.

Ventilators and Chimney Cowls
My patent rotary ventilator is **backed by a guarantee.** It is the best ventilator on the market. Write for particulars, handsome booklets of testimonials and information mailed free.
GEO. D. PEARSON & CO.
Office and Works
17 Pontiac St. - Montreal

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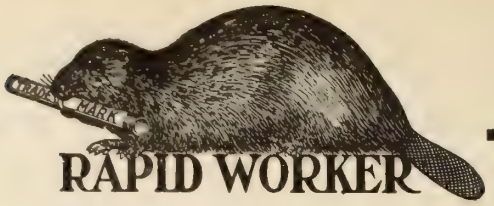
INVESTIGATION

Get in line and let us prove to you that the

GENUINE
Armstrong Stocks and Dies
ARE THE BEST.

Catalogue on request.

The Armstrong Mfg. Co.
317 Knowlton St.
Bridgeport - Conn.



RAPID WORKER

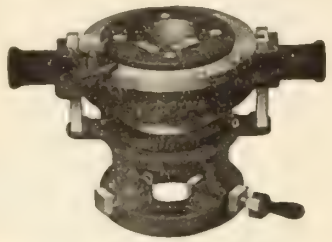
One man with a Beaver Die Stock is worth two or three men with any other Die Stock made.

"Beaver" Adjustable Die Stocks

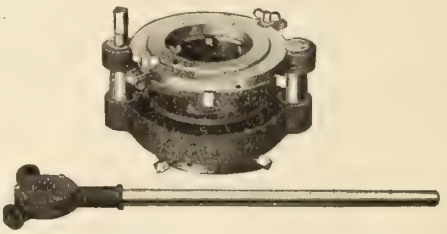
No loose Bushings or loose Dies on these two tool and they cut ¼, ⅜, ½, ¾, 1, 1¼, 1½, 1¾ and 2 inch pipe.

No. 6, threading ¼, ⅜, ½, ¾ inch, complete

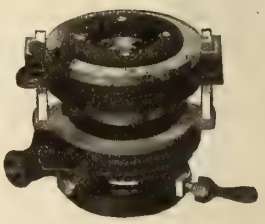
have cut the cost of pipe threading in two because they will thread all sizes of pipe without changing dies. They are built on the receding principle which positively enables one man to thread any size of pipe and produce absolutely tight joints for all work, including hot water. They save the time formerly used up in changing dies and looking after loose parts and eliminate all of thread-stripping when backing off.



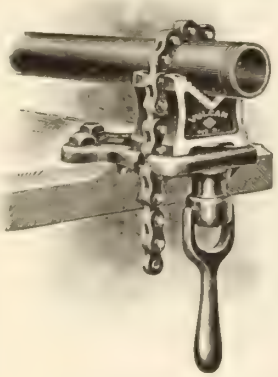
No. 25A, threading 1, 1¼, 1½, 2 inch pipe. A boy can operate it.

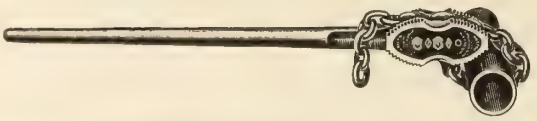


No. 60. Uses two sets of dies. One set cuts 2½, 3, 3½ in.; the other cuts 4, 4½, 5, 6 in.; they are inserted without removing any parts.

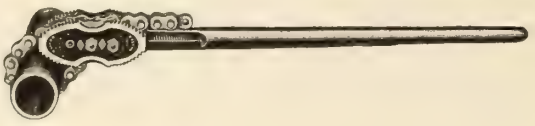


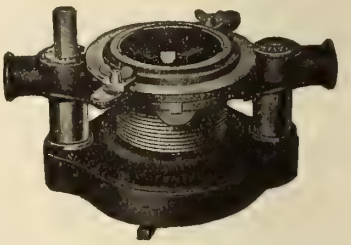
No. 26A. Cuts 1, 1¼, 1½ and 2 in. pipe. A boy can operate this tool.





Pipe Vise. Takes pipe to 4 inch.





No. 41. Cuts 2½, 3, 3½ and 4 inch pipe.

THE WARREN ADJUSTABLE DIE STOCK

With Non-receding Dies.

Made in FOUR Different Sizes.

Each size cutting two sizes of pipe without changing dies.

A strong, durable tool, threading two sizes of pipe without changing dies. Particularly recommended for those who want a Die Stock of just the required size and weight for two sizes of pipe.

NET PRICES TO CONSUMERS:—

No. 120, ¼ in.- ⅜ in	$5.00.	Extra Dies, cutting two sizes each (also ⅛), Right or Left	$1.50
No. 121, ½ in.- ¾ in	5.50.	" " " " " Right or Left	1.60
No. 122, 1 in.- 1¼ in	6.00.	" " " " " " "	2.00
No. 123, 1½ in.- 2 in	7.00.	" " " " " " "	2.00

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BORDEN CANADIAN COMPANY, 66 Richmond St. East, Toronto, Ontario.

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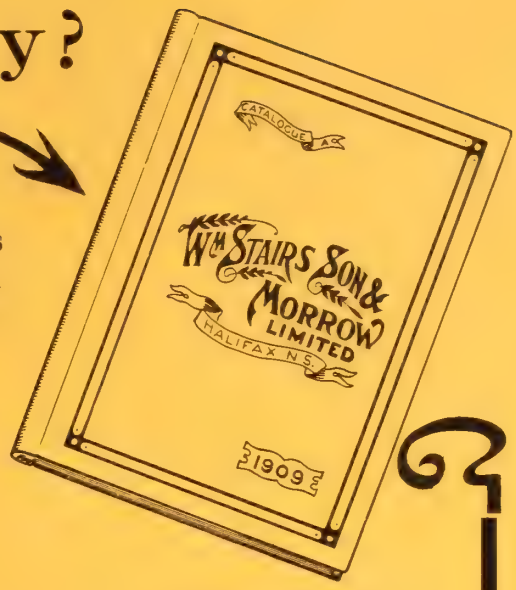

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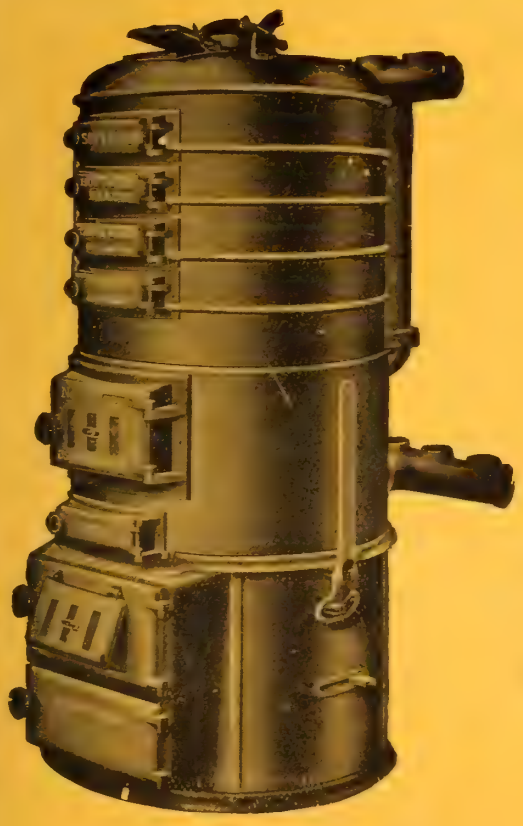
SCOTIA PLATE A 226

"SCOTIA" PLUMBING SUPPLIES

embrace all the leading lines of plumbers' supplies manufactured by the most reliable concerns in the business. As our buying capacity is unusually large, we can quote very close prices on goods shipped anywhere. If you haven't got our catalog, write us for a copy.

Wm. Stairs, Son & Morrow, Limited

Halifax - - - - Nova Scotia



RECOMMEND AND INSTALL THE

"SOVEREIGN" BOILER

The boiler with the many exclusive features. Our booklet tells you all about them—We have no time to go into them all here. But just to mention one of them—THE SIZE OF THE FIRST WATER SECTION (one-third larger than any other section). It is directly over the fire and in the path of the most intense heat, and being so large, there is no chance of water resting in it till it boils—a most important item.

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Taylor-Forbes Co., Limited,

Head Office and Works: Guelph, Ont.

TORONTO—1088 King St. West. MONTREAL—246 Craig St. West; Winnipeg—The Vulcan Iron Works, Ltd. ST. JOHN, N.B.—H. G. Rodgers, 53½ Dock St. QUEBEC, QUE.—The Mechanics Supply Company. VANCOUVER, B.C.—Taylor-Forbes Co., Ltd., 340 Pender St. CALGARY—The Barnes Co., Limited.

Plate F
199

The Standard Ideal Company Ltd.

Dimensions Lavatory 18 x 21" Oval Bowl 11" x 14" Back 8"

We have a large number of other styles including many new designs to select from-- For which see our catalogue F now ready for distribution.

We are also manufacturers of full lines of Bath Tubs, Shower Baths, Lavatories, Sinks, Laundry Trays, Wash Sinks, Range Closets, and Urinals, etc., etc.

Head Office and Factories, Port Hope, Ontario

Branch Offices and Sample Rooms: Toronto, 50 Colborne Street; Montreal, 128 West Craig St.: Winnipeg, 154 Lombard St.

Empress Self-closing Work

is the ONLY satisfactory Self-closing Work for use in Hotels and Public Buildings.

Large numbers in use in Montreal and on the Pacific Coast.

Empire Closets and Brass Goods with our name on are unconditionally guaranteed.

WOODWORK INCLUDED

EMPIRE MFG. CO., Limited, LONDON, CAN.

There is no union just as good as a

DART

Experience Proves This

Get the Genuine—
The Name is Cast on Every One

Dart Union Company
TORONTO *Limited*

PLUMBER & STEAMFITTER

and Sanitary Engineer of Canada

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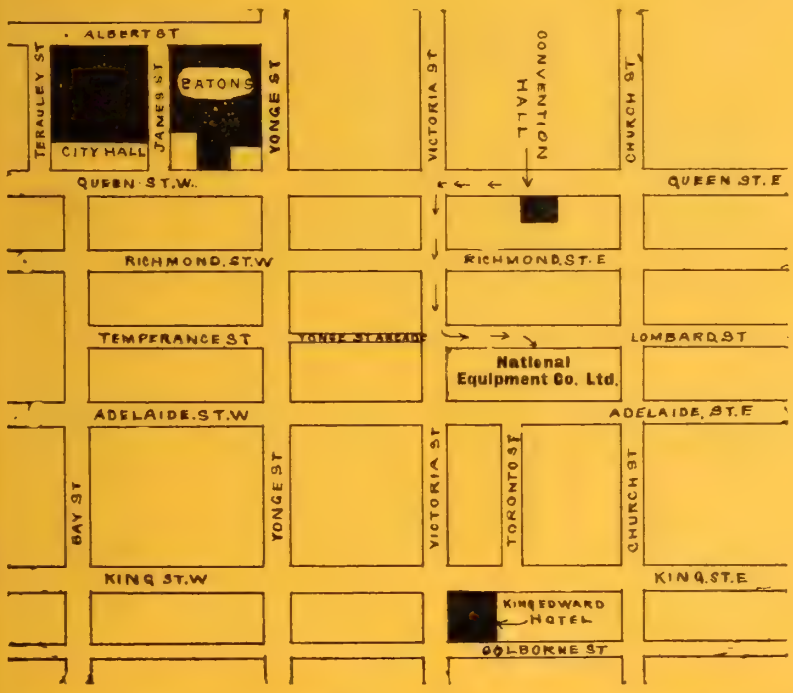
Vol. IV, No. 6 (New Series). Publication Office : TORONTO, AUGUST 15, 1910. Old Series, Vol. XXII. No. 16

Of course you're coming to the Toronto Convention

Peerless Water Service Systems

are on exhibition at our warerooms, just around the corner from the convention hall (see map). We'll be glad to have you call.



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Storage Tanks for Hot Water, Gasoline, Oil, Etc.
Measuring Pumps, Power and Hand Pumps, Motors, Engines, Etc.

Have you got our Catalogue and Price List?

National Equipment Company, Limited

21-27 Lombard Street **Toronto, Ontario**

Beaver Brand

Cast Iron Enamel Ware

Famed for its Smoothness, Colour and Wear

This Cut Illustrates Our

Beaver Brand Roll Rim Sink

This is one of our leading and best known lines, which has given satisfaction throughout the Dominion. Our new and up-to-date plant is unrivalled for the production of Bath Tubs, Slop Sinks, Kitchen Sinks, Laundry Tubs, Lavatories, Closets, etc. Customers can rely on having their orders promptly filled. Every article of "BEAVER BRAND" manufacture is guaranteed.

Amherst Foundry Co., Ltd., Amherst, N.S.

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All Jobbing Houses

MONTREAL, P.Q.
All Jobbing Houses

WINNIPEG, MAN.
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QUALITY THE CROWN TALKS

It pays to handle quality goods and you need have no hesitation in installing and recommending

"Crown" Brand Laundry Goods

They are uniformly well made of best material and carefully finished.

Drop us a postal for prices and details.

H. C. BEDLINGTON & CO.

229 Adelaide Street West, TORONTO, ONT.

SUPPLY

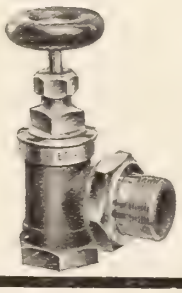
"Kerr" Radiator Valves

on your heating work, and your valve troubles are over

We charge the price and furnish the reliable goods

The Kerr Engine Co., Limited

Look for Our Name "KERR" on All Genuine KERR VALVES



Walkerville - Ontario

RAILING FITTINGS

We manufacture and carry a complete Assortment.

We also manufacture and stock a full line of Malleable and Cast Iron Fittings.

Send for our Catalogue and Price List.

FITTINGS LIMITED

Oshawa, - Ont.

Warehouses:

MONTREAL and WINNIPEG

Honeywell—Prosperity

PERFECT SYNONYMS

The Honeywell System of Hot Water Heating spells Prosperity and Dollars to the Architect, the Jobber, the Fitter and the Home.

Over 4,000 Proofs already in Canada. Can we name them for you, or demonstrate it in your own locality? The Honeywell Generator is now being "made in Canada" under Canadian management.

Do you like dollars? Are you interested?

A post card, and we will do the rest.

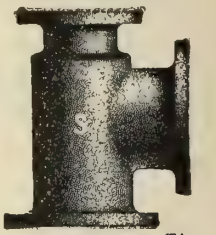
The Honeywell Heating Specialty Company

Room 1008 Eastern Townships Bank Bldg., St. James Street, Montreal

FRANK T. RAWLEY, Manager for Canada, Tel. M. 4615

Flanged Elbow

Reducing Flanged Tee
Reducing in Run or Branch



REMARKABLE TESTS

which speak volumes for the superiority of

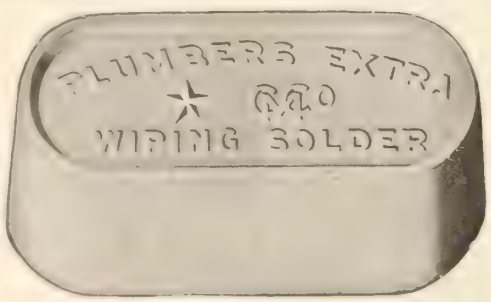
STANDARD S FITTINGS!

S BRAND

At McGill College, Montreal, our 1¼ inch Screwed Elbow, guaranteed for 125 lbs., broke at 5000 pounds pressure, and our 3 inch Flanged Elbow, guaranteed for 125 pounds, could not be broken, the packing blowing out at 2800 pounds pressure.

Think what this enormous strength means in point of safety. We make ***CAST IRON FITTINGS,*** all sizes, for Steam, Gas, Oil or Water. Write for details.

STANDARD FITTING & VALVE CO., Limited - GUELPH, ONTARIO



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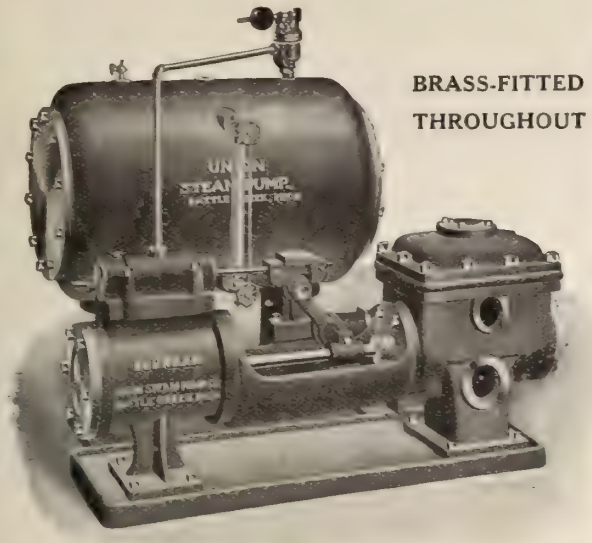
GET THE SOLDER WITH THE TIN IN.

For a First-Class Joint, Use

Extra Star Wiping Solder

Manufactured by

The Canada Metal Company, Limited, Toronto



BRASS-FITTED THROUGHOUT

The BURNHAM will not short stroke—and for this reason it is the most suitable pump for HOT WATER SERVICE.

You can always depend on the BURNHAM for handling the condensation from Heating Apparatus, Dryers, etc., etc. Standard sizes in stock.

Darling Bros., Limited

15 OTTAWA ST.

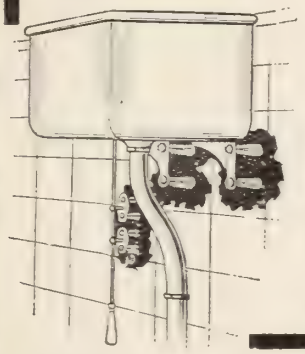
Toronto MONTREAL Winnipeg

This bolt will hold it!

Here's a fixture that must be fastened, not only securely but neatly, too, because a bathroom is often one of the beauties of a house. It is evident, therefore, that wood plugs, or the messy process of "leading in" cannot be used. "Leading in" may be secure, but it's unsightly; ordinary screws look good enough, but they won't hold. There is only one logical issue, the adoption of

STAR EXPANSION BOLTS

They will hold neatly and securely in any kind of building material, brick, stone, concrete, marble, tile, plaster or granite. STAR EXPANSION BOLTS are no experiment. They're a proven, reliable means of making fastenings.



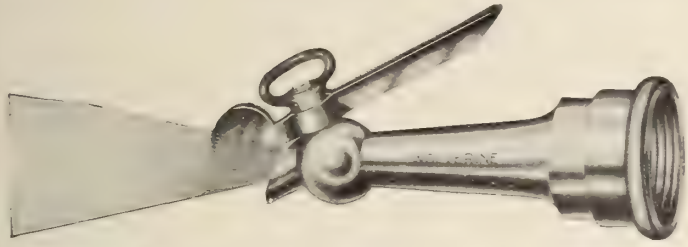
Ask your dealer or write direct to us. We will send you some samples and our latest 70 page catalogue No. 74, showing a complete line of plumbing specialties. Better write now before you forget.

STAR EXPANSION BOLT CO.

Catalogue Department 74

147 Cedar St., - - New York City

"Only the Best will Successfully Stand the Test"



Wolverine Hose Nozzle

No obstruction in Waterway, or back pressure on hose.

Wolverine Hose Plier

(Nickel Plated)

FOR CALDWELL BANDS

MANUFACTURED BY

CANADIAN WOLVERINE CO., Ltd. - Chatham, Ont.

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Knowledge is Power

Every hardwareman can get valuable pointers and make his business a more profitable proposition if he will study the experiences of experts who have 'made good.' Our Technical Books for hardwaremen cover a wide range of subjects, among which may be mentioned Metal Working Books, Hardware Window Dressing, Store Business Methods, Paints and Painting, Salesmanship and Sales Plans and Advertising. We have also the very latest books on the plumbing and heating problems.

May we send you a copy of our comprehensive catalogue? You'll find details therein of the very book suited to your individual needs.

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and Sanitary Engineer of Canada

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Circulating amongst Plumbers, Steam, Hot Water and Gas Fitters, Sanitary Inspectors, Heating and Ventilating Engineers, City Engineers, Boards of Health, Architects, etc.

TORONTO AUGUST 15, 1910

A GREAT OPPORTUNITY.

Only a few days more and the National Master Plumbers and Steamfitters' Convention will open in Toronto.

Are all the local associations sending their full complement of delegates; are all master plumbers, who can spare the time—and remember that where there's a will there's a way—packing up their suit cases to help swell the numbers and give the Association another lift up. That all aren't is probably true, but that a large number will be on hand is absolutely certain.

Important questions are to be discussed at the convention. The delegates need to feel that they have the solid support of the country behind them. Show them this by gathering in Toronto in full force. Let enthusiasm reign—the enthusiasm that can only be engendered by a united and hearty body of men confident in themselves and confident in their ability to thrash out the knotty points in the best way. A successful convention means many years added to the life of an association. It means another lift up in the status of the industry. It means fresh ideas and increased stimulation.

A record convention means that the officers who are appointed at the meetings are inspired to put forth their full efforts in their various duties. They do not feel that, may be, their selection does not meet with the full approval of the members throughout the country, and that perhaps some other delegate would have been appointed if the convention had been more representative.

Let us have a convention that will admittedly be the best ever held—not only in numbers, but in business, and in enthusiasm. Show the Toronto men that their efforts to make things go are being recognized—that they are good fellows and have worked hard for the cause. Every man who travels to Toronto shows that he is really earnest in his desire to promote the interests of his trade, and the welfare of associated work. Let no man say, "oh So-and-So is going, he will do for me," or let one association say the same thing of another association. In numbers there is strength, in solid deliberation there is progress, in loyalty to a convention there is loyalty to a cause.

Every thinking plumbers knows, or should know, that there is only one effective way to remove the disabilities under which he now works, and that is combination. As we said in our last issue, no great social reform was ever instituted without the full force of the people behind the movement, no labor demand was ever successful that did not have a solid union to back it up, and so with the plumbing industry to-day. All the complaining in the world will not remove the injustices which now beset the plumber, unless one and all combine and work loyally together. When this is once effected, present troubles, which seem at times almost beyond relief, will be swept away.

You have your chance now, Master Plumbers of Canada. Gather together in Toronto, officially and unofficially. Everyone will be welcomed. Inspire the delegates to tackle the knotty points with a feeling that good must follow. Start a mighty ball rolling that will gather impetus as time goes on until all grievances and disabilities are crushed out of existence.

VANCOUVER GROWING TOO FAST.

The rapid growth of Vancouver has brought its perils, and prompt action on the part of the authorities is necessary if an epidemic of disease is to be prevented. According to the Vancouver World, a large suburban area adjacent to Mount Pleasant, is not supplied with sewers, because the City Engineer has been unable to find a convenient method of dumping the sewage into some body of water. Modern sewage disposal beds do not seem to have been considered.

The World in drawing attention to the existing conditions, says:

"It cannot be questioned that the condition of affairs which is thus revealed is of the utmost gravity. At present the only means of drainage in the district referred to is septic tanks, put in by private owners. Those tanks are all right, except in one particular, which, however, is of the very first importance; they are too small. When they overflow, a thing which they frequently do, crude sewage runs down the gutter, giving off disease-breeding germs in all the length of its course towards what the City Enginer has said he was unable to find—an outlet. It is alarmingly apparent that such a situation is pregnant with potentialities of the most baleful character. Should a period of excessive heat such as that in which the east has been sweltering for weeks, visit Vancouver, as it is almost certain to do, what would be the probable consequence? One shrinks from the question: the answer is so obvious and so appalling. An epidemic of infectious disease in Grandview and Mount Pleasant, would sweep the city like a scourge, leaving a train of saddened hearts and desolate homes in its wake. The taking of emergency measures to avert such a calamity is imperative. The number of septic tanks should be added to without delay. The situation revealed in Grandview, ex-

tending to the still more thickly populated district of Mount Pleasant, is one which calls for instant remedy, and also for ample provision being made against the recurrence of such a situation in any other part part of the city, at any time. The present state of affairs is a reflection on the city and a menace to the Public Health."

ELECTRICAL HEATING MAY BE CHEAPER.

If successful it will mean that at small cost heat can be stored, and that all surplus energy in any water power or steam plant can be converted into heat and stored in the house or factory, and released as wanted for heating water, for house heating, or making steam, or raising temperatures in any way. And if this is accomplished the use of coal will become unnecessary and Ontario will be independent of Pennsylvania or Nova Scotia. The millions of horsepower in the waterfalls and rivers can all be wired to the populated centres for heat and for industry, and the supply can never be exhausted.

OFFICIAL NEWS

N. A. M. P. & S. F. of CANADA

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Treasurer,—H. Mahoney, Guelph. Secretary,— H. W. Munday, Montreal

Provincial Vice-Presidents, Nova Scotia, Frank Powers, Lunenburg; New Brunswick, Wm. Watson, Moncton; Quebec, J. E. Walsh, Montreal; Ontario, R. J. Shannon, Toronto; Manitoba, R. L. Beattie, Winnipeg; Alberta and Saskatchewan, E. J. Young, Calgary; British Columbia, John Colbert, Victoria.

Chairmen of Committees,—Legislation, H. A. Knox, Ottawa; Sanitary, P. C. Ogilvie, Montreal; Apprenticeship, J. Griffin, Montreal; Essay, E. Russell, London.

Next Convention will be held at Toronto, August 31 and Sept. 1, 1910.

TEN COMING FROM MONTREAL.

The following delegates will represent Montreal at the coming convention: John Watson, J. Thibeault, L. Conroy and J. Gordon, the alternates being T. Moll, M. Quigley, and W. Ryan. There will also be present the Montreal officers of the National Association who include J. Laurier, president, H. W. Munday, secretary, and J. E. Walsh provincial vice-president for Quebec.

ALBERTA WILL SEND THREE.

Editor Plumber and Steamfitter,—Referring to your letter of August 5th, I will be on hand for convention accompanied by Jas. Marr, president of Calgary Association, and representative from Edmonton.

We look forward to a rousing convention.

Calgary and Edmonton associations are fraternizing at a union outing at Edmonton, on Friday, twelfth inst.

E. J. YOUNG,
Provincial Vice-President.

Calgary, Aug. 11, 1910.

FOUR COMING FROM OTTAWA.

Editor Plumber and Steamfitter,—Your policy in persistently advocating how and why the plumbing and heating business should be represented by different conditions, to those which are now the custom is worthy of a crown, which will ultimately, if not immediately be thrust upon you. You have had abundant discouragement but you have never lost heart, in foul as well as fair weather you have stood by your guns and by your work. You stand to-day, as the party mainly responsible for the coming assembly of the master plumbers in your celebrated city.

In associating once more with my fellow-craftsman, business colleague or competitors known by this, or any other term, it might be useful to employ, I venture to state, that my understanding is somewhat improved by a course of reflection I have taken since your city was perhaps, unduly celebrated by a judicial enquiry and examination into the business methods of the plumbers, which led, in its conclusions, to the shrinkage in the value of association. The constructive genius of the trade is to galvanize and re-varnish itself by sound rules and re-christen itself by changing its name.

There are new lines to devise which are certain to arrest the attention of the progressive mind. One is the argument, which has seemed exclusive about the health giving properties of good plumbing. You may apply the argument anywhere and at anytime you like, it does not wholly convince. What does convince, though, is by referring your judge or critic to the enormous capital invested in all the channels that are necessary to make a plumbing or a heating outfit complete and that by moving this capital, the citizen or the community are enriching themselves. Selfishness is a misnomer and does not apply—it is the grand universal scheme of business, with all force to all, and by all.

In my opinion if all the municipalities of the Dominion were appreciated on business lines—the delegates having the proper backing, no serious objection would be offered by the authorities to any measure of improvement—notwithstanding the special claims that good plumbing has on the public mind.

Another line that may safely be proceeded on is to impress the operators in the trade, that they, in many places are receiving returns for their labor which are in excess of those paid to some professional branches.

A good plumber is worthy of his hire—the highest going. But a plumber who is incapable of making an intelligent report of a job is not worthy of a wage in excess of a professional man. When the public is paying the price it wants its goods delivered by one, who has paid his price by improving his head in order to qualify. There are many other points, too numerous to mention, which will engage the attention of those who are interested in our work.

This convention is a revival and I hope all the old sinners will turn up and renew their loyalty and that they will bring along a large number of converts. The man is blind who cannot see the good of association. No matter how strong his character may be, when he stands in an assembly his light shines before all men, when he keeps away from his fellows, he hides his light.

There are likely to be three or four on hand from Ottawa.

H. A. KNOX,
Ottawa, Aug. 8. Chairman Legislative Committee.

ONTARIO PLUMBERS WAKENING.

Editor Plumber and Steamfitter.—I have just read your last issue and find the Toronto boys making a great move to get the master plumbers to realize that they should occupy the first place in the country and be leaders rather than tailenders as at present.

I would suggest that you advise through your paper that now is the time for the Province of Ontario to get organized at the coming convention.

I do not seek an office in that body but I will do all in my power to further the interest of the master plumber of the banner province. We need the best men we can get to carry out this great work, and we have the material second to none in the Dominion. It is my desire to be present at the coming convention and I expect to have all the master plumbers from Guelph join with me. Am looking forward to one of our old time conventions.

HARRY MAHONY,
Guelph, Aug. 4. Treas. N.A.M.P.

Why Plumbers and Fitters Should Band Together

J. W. Drury, Detroit, Discusses the Subject of Trade Protection in an Interesting and Convincing Manner.

An intelligent organization and intelligent co-operation are the keynotes of success in all association work, and especially the work of those associations having for their object the bettering of trade conditions and the protection of trade. So must intelligent co-operation be the means of extending the organization and its influence.

The Master Plumbers' Association depends upon its members for that co-operation which alone will make it more and more a powerful influence in the work it has undertaken—a work which meets the approval of practically every master plumber in the country, many of whom would not remain outside of the association if they once thoroughly understood the advantages of membership. We wish it were possible to have an organizer in every locality. Even were that possible, he could not do the good for the association that would result from the intelligent co-operation of the individual members with the national and local officers.

Never before has trade protection in the various branches of industry received so much thought or been so well understood as at the present time, and never before has it been so popular. Particularly is this true in the field of the master plumber. Everywhere there is a keener interest now taken in the work of the association than has heretofore been the case. But how much more effective would our work be if in every locality where we now have but a member, or two members, the one or two would interest themselves in bringing in others and in forming a local, which would prove of inestimable advantage to both the old and new members!

If we would assume each other honest, and get together in united effort to improve the situation, things would get along much better.

Many people are short in united effort. There are lots of business men who do not know what "united effort or co-operation" really means. They don't seem to realize that in helping the general cause, they can help themselves as well.

They think it a waste of money to contribute to an association. They seem to believe that an association is a sort of poker proposition in which the jack-pot is to be raked in by some winner. If they put $50 or $100 into an association, they say farewell to the money and never expect to see it again. They pose as martyrs.

Now, that isn't the way of it at all. If you contribute your cash to an association of united effort, it is to help move your freight, help fight your battles, and help you in a great many ways in which you could not help yourself single-handed. If you think your $100 goes into a jack-pot for some lucky fellow to rake in, just watch it, Mr. Plumber, and see what becomes of it.

Jobbers Believe in Organization.

The manufacturers and wholesalers are strong on associations. They pay a lot of money to keep their various organizations going. When you present your kick to a wholesafer, it must go to an association. Now, how is the retailer going to reach the wholesaler unless he does it by united effort?

The words "united effort" are very common and mean a great deal, but do they really mean anything to you?

Have you any conception of what united effort is?

Have you any idea of the continuous united effort that an association puts forth?

It is individual effort multiplied many times over. Co-operation is the secret of our situation and success. The modern method is through association.

If there had been the right sort of co-operation, many of our past and present predicaments would have been foreseen and avoided.

The retailers had given the situation so little thought, and had come so far from anticipating any trouble, that up to the time when the gale made its appearance they thought everything lovely and the goose hanging high and dry.

Now, when the fury of the gale has come, there is a scramble for ways and means to get from under. Why should this be? There is no excuse for it; only that we are not united.

The point aimed at is not a criticising one, but a boosting one. It is desired to impress on every plumber the advantage of getting together.

Need of Co-operation.

There are many things causing irritation. Conspicuous is that of one plumber trying to undermine another, auditing another's bills and thereby thinking to gain favor with the customer. One says, I'll not do this, and another says, I'll not do that.

Is this the way business men should do in these modern times? Is this co-operation?

We think the business is going to Hades; we think we are down and out; and we blame the numerous small plumbers for it. The ship has sprung a leak, the signal of distress is being hoisted, the life-boats are swinging in their davits, and the gale is raging on, and what are we doing to save ourselves?

Man the pumps, float the ship, spread the sails, and with united effort and co-operation, weather the gale and sail safely into port.

Retailers and wholesalers all have interests along the same lines. Loyalty should be your honored and cherished desire. It should be prized the same as your life.

We began by speaking of united effort, and we will close in the same manner, for we want to add that united effort and co-operation are needed, and must be maintained by the retailer just as much as by the wholesaler, or even more so.

Yet the retailer too often thinks that he doesn't need to bother his head over these problems and spend money for association and co-operation. In these days, the retailer without association or co-operation is like the small rivulet flowing from the mountain side through the bush and golden fields, until it meets with the father of mighty waters, when its life and existence is swallowed up, and it is gone. So it is without united effort, co-operation and association.

PUBLIC BATHS PAY.

The public baths, of Bradford, England, include swimming, Turkish, Russian, shower, slipper, medicated and vapor baths. During the year ending March 31, the number of bathers using the baths was 480,361. A most satisfactory feature of the returns is the growing popularity of the cottage baths, of which there are four, which were patronized during the year by 50,000, nearly one-half of whom were school children, free of charge until Friday afternoons. On Friday afternoons and on Saturdays they are open to women, at a charge of two cents. There are nine swimming baths, which were patronized by 387,753 persons during the year, about two-thirds of whom were swimmers. Of the 13,945 Turkish bathers, 2,383 paid 60 cents each; 4,403, on Wednesday afternoons, paid 36 cents; and 7,159, on Saturday afternoons, paid 18 cents. The number taking electric baths was 3.735, of whom 1,935 took them under medical advice. Great interest is being taken in the work being done by this municipal institution, in not only inculcating habits of cleanliness and hygiene, but in encouraging pupils to become proficient swimmers.

A permit was issued to J. A. Jones, for a dwelling, at Hamilton, to cost, $2,500.

Songs to Sing During the Plumbers' Convention.

(PLUMBERS' STEIN SONG.)

For it's always fair weather when the plumbers meet together,
With a stein on the table, and a good song ringing clear.
For it's always fair weather when the plumbers meet together.
With a crowd of good fellows, and their good songs ringing clear.

THE GOOD OLD SUMMER TIME.

There's a time in each year that we always hold dear,
Our Convention time.
When we meet together to better conditions
Our Convention time.
When our labors are over and we are in clover
And life is one beautiful rhyme,
No troubles annoying, each one is enjoying,
Our glad Convention time.

In plumbing Convention time
In plumbing Convention time,
Meeting together once each year,
With a crowd so fine
You shake our hand and we'll shake yours
And that's a very good sign
We're bound to be bigger and greater than ever,
From this Convention time.

THE PLUMBING TRADE.

(Tune, "Yip-I-Addy-I Ay.)

It's our contention
That this Convention
Is the best that ever have had
For we're in such number
That we haven't a grumbler
And none of us can feel sad.
'Twould have meant conviction
To make the prediction
That success would come so soon.
But Plumbers and fitters
Are "never say quitters"
So here's to the victory we've won.

Yip—I—Addy—I—Ay—I—Ay
Yip the Association,
It's the mascot that beats them all,
Standing together we have the call.
Yip—I—Addy—I—Ay—Ay
We feel just like shouting "Hurray! Hurray!"
Members growing each year
We have nothing to fear
Yip the plumbing trade.—Repeat.

SCHOOL DAYS.

Nothing to do, Master Plumbers,
Nothing to do, you say?
Let's take a trip on memory's ship
Back to the bygone days:
Sail to the old village school-house,
Anchor outside the school door.
Look in and see, there's you and there's me,
A couple of kids once more.

School days, school days, dear old golden rule days,
Readin' and writin' and 'rithmetic,
Taught to the tune of the hick'ry stick.
These are the days we like to know
These are the days which friendship grow
Days we'll remember where'er we go
When we were a couple of kids.

(OLD GRAY BONNET.)

Forget your tools and wrenches
And pipe on the benches
While we mix some work with our play.
Though our work builds our muscle
We don't have to hustle
On this glad Convention day.

(THE SUPPLY MEN'S SONG.)

Strike up the band, here comes a plumber,
Cash in his hand, earned it this summer,
Stand in a row, don't let him go,
He's a cinch for buying from our drummer.

(TO PRESIDENT JOE LAURIER.)

Do—ray—me—fa—so—la—se—do
Joe Laurier was in Ottawa just three years ago
Ask him to tell you how he spent his dough
Do—ray—me—fa—so—la—se—do.

MAHONEY, THAT'S ME.

(Tune Harrigan.)

Who is the man who will spend or will even lend?
Mahoney, that's me.
Who is your friend when you find that you need a friend?
Mahoney, that's me.
For I'm just as proud of my name, you see.
As an Emperor, Czar, or a King could be:
Who is the man that helps a man every time he can?
Mahoney, that's me.

M—A—double—H—O—N—E—Y spells Mahoney,
Proud of all the Irish blood that's in me
Divil a man can say a word agin me.
M—A—double—H—O—N—E—Y you see,
Is a name that a shame never has been connected with
Mahoney, that's me.

Who is the man never stood for a gad about
Mahoney, that's me.
Who is the man the Association's mad about?
Mahoney, that's me.
The ladies and babies are fond of me,
I'm fond of them, too, in return, you see:
Who is the gent that's deserving a monument?
Mahoney, that's me.

(HAS ANYBODY HERE SEEN KELLY.)

Has anybody here seen Munday
Munday from Montreal
Has anybody here seen Farrell
You can tell him by his smile.
Mahoney's hair is red and his eyes are blue
And he's Irish through and through
Has anybody here seen Powers
Or Knox from Ottawa.

(Tune—DOWN WHERE THE WURTZBERGER FLOWS.)

Take Shannon down, down, down to where
Humber Bay flows, flows, flows:
Let him drown, drown, drown, all his troubles and cares and
woes:
Just order two seidels of beer for him.
If he don't want to drink, it is merely a whim;
The Rhine may be fine but "Say Corby" for mine
Down where the Humber flows.

(MOONLIGHT ON THE LAKE.)

We'n'sday ebening on de moonlight,
You will hear us plumbers singing
In de ebening on de moonlight
You will hear our voices ringing
How the ladies will enjoy it,
They will sit all night and listen
As we sing on de moonlight, We'n'sday ebening.

(TUNE JOHN BROWN'S BODY.)

Cooper ate some oysters, Cooper ate some ham,
Cooper ate some cucumbers, Cooper ate some jam,
Cooper drank a glass of milk, Cooper drank some beer,
Then George wondered what made him feel so queer.
Whoop came the oysters, whoop came the ham,
Whoop came the cucumbers, whoop came the jam,
Whoop came the glass of milk, whoop came the beer,
George then knew what made him feel so queer.

The Plumbing Business

As long as the plumber clings to his traps, tubs, pipes and wrenches with a mind rising no higher than the mechanical details of his trade, he will be merely a "plumber." This series of articles will deal more particularly with the business end and readers should derive benefit from reading them

Written for the Plumber and Steamfitter by Charles H. Denison.

CHAPTER III.

When a capable architect starts the plans for a residence, a store, or perhaps a "sky-scraper," he proceeds along certain well-defined lines, and the plans grow systematically. Before the cellar is dug, or the first stick of timber placed upon the job, he knows the amount that the completed edifice will cost.

A man decides to open a grocery store in a city anywhere from 5,000 to 100,000 in population. Does he rent a building anywhere? Does he put a single cent into that proposition until he has looked the grounds over most thoroughly and observed just what the consuming capacity of the vicinity of the store would be? A greenhorn might, but the keen man of business will take these matters, and many others besides, into careful consideration, before he ties up his money in business.

Look Before You Leap.

I do not mean to insinuate by the foregoing that the man who intends to open up a plumbing business should select a prominent place on the main business street of the town, for many times the rent would be out of all proportions to the business; but he should look over the field and be sure that the particular locality is not overdone already and that there is a fighting chance for business and also a goodly number of what we will term as "prospects," meaning people who have not "modern conveniences," but are amply able to afford the same if rightly approached.

"Look before you leap" is distinctly applicable to the man who is thinking of starting in the plumbing and heating business; and so when a man with a strictly limited amount of capital starts out in the business, rents a basement for quarters, or perhaps sticks a rough, wooden shed up at the back end of his lot, I say he has got his nerve with him, and probably that's all he will have left in a year or two.

What's little John Small, with a capital of only $1,000, going to accomplish in the game against Hogg & Buckem, who are rated at $40,000, to $60,000? Yet an unusual amount of work in sight will cause many a good journeyman to throw up a permanent place and start into a career for which he is, at the time, totally unfitted; sacrificing future trade and prospects for the sake of a few dollars in sight, which he may, or may not land after he has gotten tied up in the business.

In his capacity as a business man he will find that he is in a totally different atmosphere. The chances are that before he has been in business very long that he will brush up against some clever man who has had the benefit of a business training of many years and the experience may not be a pleasant one, besides, it is apt to be extremely costly to our new master plumber, who is serving his apprenticeship in business.

About Going Into Business.

In a previous chapter I remarked that a man should study carefully a year before he starts out in the business. I mean by that the man who has not received a business education, no matter how good a mechanic he may be. Read over the following lines and you will see that the man would have something to do. A three-years' course would be more to the point.

1. He should be able to keep a set of books.

2. He should be able to draw up a set of specifications, and know the law which covers them.

3. He should be competent to draw up a correct set of plans.

4. He should know how to write a clever business advertisement and also a good business letter.

5. He must know how to estimate correctly.

6. He should posses a library of the best and most practical books which relate to heating, plumbing and sanitation.

7. He will find it the best investment that he ever made to become a subscriber to at least two reliable trade papers, **and read every copy that comes to his desk.**

I did not say that the master should keep the books; merely know how. Do you want to trust the most vital point of the whole concern entirely to some one else and not be able to tell any more about it than a rabbit, if the occasion should arise that made it absolutely necessary for you to be sure exactly of where you were at?

Things You Should Know.

The master may not have to draw up one set of specifications out of ten jobs figured on, but he should be able to spot the weak places and the catches. No matters should be left entirely to the pleasure and decision of any architect. The master should know where and how to avoid such matters. Otherwise he will get well "stung" some time for his loose methods and carelessness.

He can hire a man for from $15 to $25 a week to draw up all of his plans—but he, and he only, should know that they are correct. If he is not able to do this he will soon have a large assortment of balky jobs on his hands, as well as quite a number of well-assorted law suits to be settled sooner or later.

The first part of the fourth point which I have mentioned relates to the later and more advanced masters. Sometimes, in past years, the plumbers have considered that it was money thrown away to invest in the printers' ink. The most advanced and successful men in the business to-day are advertising in the papers regularly. You can write the ad. for your business better than any paid help. Learn how. Put your heart into the task for it will certainly pay big money eventually. If you can talk well you should soon be able to get out a good business letter. It may cramp you a bit to cut out the slush, but it is good for the constitution.

If the estimates are put up in such a manner that the jobs come out "shy" the whole business will go to smash in short order. You may be well enough fixed so that you can hire an estimator, but it is a dead sure thing that the master is the one that should know absolutely that the estimate is made at the right figure, and that at a profit.

Books of Reference.

I shall talk more about "profits" in a later chapter. It is not given to any one man to absolutely know all of the technical and the practical points in relation

to the craft and business. Therefore, he should follow the same plan as does the lawyer or the physician. Have a library and know where to find some of the many points which will escape his mind.

He will find, also, in the books various points upon which he was quite ignorant. All books relating to our craft are not written in a manner that takes a college education to unravel. There are plenty of plain, common sense books available—and the man who desires to stand at the head of the list will read them carefully.

Books are, so to speak, anchored to the mile-posts of time. The trade paper comes once or more times every month in the year and keeps one strictly up-to-date. It has the latest news, various plumbing and heating jobs, explained in a careful manner, hints on your business and suggestions on advertising, education and many other matters too numerous to dwell on here.

The price you pay for the paper will not pay for the paper upon which the magazine is printed. The amount of good derived from one or more of these trade papers can hardly be estimated in mere dollars and cents. They are an educations of themselves and deserve the careful consideration and hearty support of all master plumbers, journeymen and **men who make their living by being connected in any manner with our craft and business.**

What Evolution Has Done in Plumbing Trade

Address of Andrew Young at the Chicago Convention of the Master Plumbers' Association —A Look Into the Past and a Forecast of the Future.

Thirty years ago in many cities, the average plumbing shop was a veritable junk shop. At the head of some dingy basement-stairs, a cracked sink or "busted" boiler told the passer that plumbing was carried on. The plumber was the standing joke of the press and it was deserved.

But with the advent of the Master Plumbers' Association came the awakening. Just and equitable trade relations were established between the plumber and the manufacturer. The local associations by lectures, open meetings and their local support of trade-schools, and activity in the enactment of laws, conserving the public health, won for them the support of the citizens in their communities, and to-day the plumber is the one mechanic that makes it possible for cities to exist.

Without plumbing and drainage your giant buildings would be but monuments to the plague-ridden dead and dying within their walls. Sanitary enactments fostered by you have bettered the condition of those who by poverty or circumstances are compelled to occupy the cheaper tenements in our cities, and in time will lift them from their purgatory to the paradise of healthful living and environment. It should never be forgotten by our law-makers that insanitary conditions of any part of the community is a menace to the whole; that a sickly and diseased population engenders and propagates vice and crime. The criminal's nursery is in the unsanitary quarters of every large city.

It is not so many years ago when the mansion of the wealthy was noted for a collection of paintings, elaborate frescoes or quaint furniture, but mark the change; your skill and the taste and genius of the manufacturer have made the bath-room the show-room of the house. Its elegant appointments, its mirror reflecting the creator's image, refresh and invigorate its devotees to meet the battle of life. You gentlemen, by your work are the apostles of humanity. The prophet Isaiah says, "The wilderness and the solitary place shall be glad, and the desert shall rejoice and blossom as the rose."

In the work of impounding rivers and storing their water for irrigation, you have been factors in fulfilling the prophecy of Isaiah, in making the waste places glad. You have harnessed the torrent and bridled the waterfall and turned its energies into light and power for the use and comfort of mankind. In Cuba and Panama you have eliminated that scourge of years, yellow fever. Practical sanitary work will give to millions yet unborn reclaimed lands that shall blossom as the rose.

Love Your Trade.

No crusader of old seeking to rescue the holy sepulchre from the infidel ever had a nobler mission than yours. In all this work you have taken the picture and by your fertile brains and cunning hands have made of it a reality for the benefit of mankind.

There is still work to be done; the removal of garbage in many cities is crude unsanitary, unsightly and disease-breeding. Garbage can be removed as readily as any other waste. The city of Chicago in the past three years has appropriated nearly $1,000,000 for the removal of garbage. A part of the garbage is burned, the rest as in the past is used as filling for abandoned clay or quarry-holes, the land when filled being built upon. Imagine, if you can, the disease-breeding possibilities of this condition. The remedy for this condition is to place the practical sanitary work of cities in the hands of the sanitary expert, who by education and practical training is fitted for the work. This department should not be an appendage to a department with a physician at its head, but should be free and untrammeled in its work in conserving the health of the community; its head should have the power of appointments and discharge. We are warned of the disease-breeding house-fly, while we maintain 500,000 garbage cans, each one an incubator for its propagation. The remedy—practical men for practical work. The intentions of the medical men as health-department heads are no doubt good, but hell is paved with good intentions.

I hope upon my next visit to your city to see a garbage-opening at each sink, self-sealing, where the garbage can be placed and whisked to a garbage-barge at your street-ends on the river, and from there taken to a place of treatment and returned to the soil as a fertilizer. This system has possibilities in connection with vacuum-cleaning of streets and the deposit and disposition of street-sweepings.

Broaden Our Activities.

I hope some of the inventive minds in the association will solve this problem of cities before the next convention. A bill is now before congress for the purposes of creating a National Board of Health. Should it pass, see to it that some practical men are upon the board. If you use your power, this end can be attained. This association by virtue of its work should be represented on that board in your own community. Take an active part in its government. Your training in your business and thorough knowledge of a city's sanitary needs would make your services invaluable.

We should broaden our activities. Let us take some of our superfluous revent-piping and turn them into filtered, purified air-supplies, through which, by the pressure of a button, a wholesome supplyply of air can be poured into the premises at will, other pipes carrying away the contaminating air at the floor-line. A vacuum system points the way as to the disposal of garbage and impure air.

When I received the report of your sanitary committee I wrote upon its cover, "By these signs we conquer." Its contents reflected the work of master minds. This association has a glorious history. Its officers, self-sacrificing, able and honest at all times, have deserved well at your hands. In all its history we have never had a Judas Iscariot. Your record is a proud one. See to it, young men, that it is maintained. In our success as an association, we owe a

debt of gratitude to the trade press. Ever loyal to your interests, often at pecuniary loss, they have deserved your hearty support.

In conclusion, do not forget your duty to this association and your duty as a citizen. We can all, no matter what our station in life, do something to add to the sum of human happiness, to smooth the way for the unfortunate and poverty-striken. It is said our country is the paradise of the rich. It should be our duty to see that it does not become the purgatory of the poor. We can all aid in doing something to make the lives of all our citizens, especially the poorest of them, somewhat better, somewhat nobler and somewhat happier.

Let us in the words of the poet:

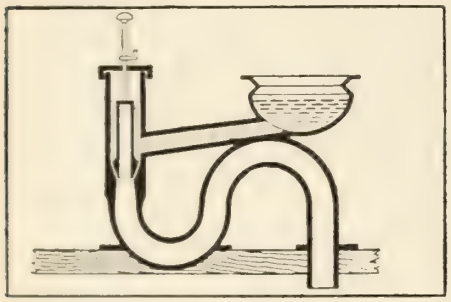
"So live, that when thy summons comes to join the innumerable caravan that moves to that mysterious realm, where each shall take his chamber in the silent halls of death, thou go not, like the quarry-slave at night, scourged to his dungeon, but sustained and soothed by an ulfaltering trust, approach thy grave like one who wraps the drapery of his couch about him, and lies down to pleasant dreams."

Can Siphon Jet Closets Be Improved?

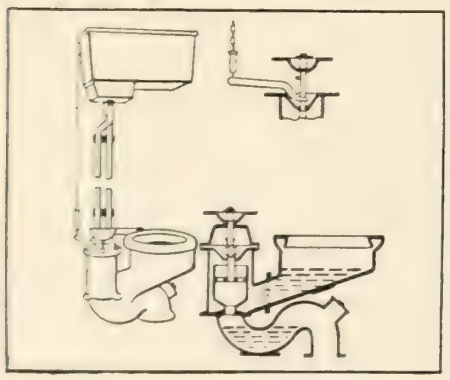
Charles R. Schmidt Expresses His Belief That Improvements Can be Made in an Address Before the Convention of Plumbing Inspectors and Sanitary Egineers at Trenton, N.J.

When I entered the business about 35 years ago, the short French hoppers, the Philadelphia hoppers, the pan closets and the plunger closets were considered one of the luxuries of civilization. The flushing of the pan and plunger closets was accomplished by means of valves and the flow was regulated by means of springs in the valves.

The pan closet was at that time most extensively installed in bath rooms, and



STUART PLUNGER CLOSET, 1870



DEMAREST CLOSET, 1882

whenever the water pressure of the supply fluctuated, or the pressure was out of proportion with the elasticity or strength of the valve spring to give the required flush, these closets were indeed the foulest receptacles one could encounter, and with the soil pipe terminating at the closet with no vent, the foul air entered the rooms and has shortened the lives of many.

About 1877, J. Zane, of Boston, brought out a side outlet plunger closet with enlarged plunger chamber. This was quite an improvement over the old. The large body of water contained in the bowl and plunger chamber by itself gave a good flush. The plunger closets made prior to Zane's lacked the reservoir in the plunger section.

Zane's was quickly followed by Jennings in 1877; by Myers in 1881; the Murdock in 1882, and numerous others in the plunger closet line.

To J. Demarest and the J. L. Mott Iron Works belong the honor of having successfully introduced the closet tank about 1881.

The next step was the all-earthen wash-down and wash-out closets with tank supply. These closets were then considered the height of perfection.

Up to this time the various closets had been partly, or in the whole, copied from our European friends. In the United States we were much behind England and most of our earthenware was imported from England.

The era of awakening in the United States came when G. E. Waring, Jr., of Newport, invented and patented in 1882 and 1884 his "Valveless Siphon Closets."

With one leap we left Europe behind in the race for sanitary closets. It was the inventive genius of the clear-headed American, G. E. Waring, Jr., which accomplished it. One piece of eathenware, without any mechanical appliances, constituted a siphon closet with a deeper water seal than in any other closet or trap. It was simplicity itself.

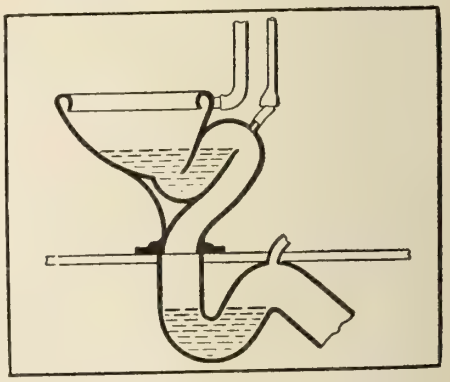
To G. E. Waring, Jr., therefore, belongs the honor of having invented the all-earthen one-piece siphon closet. He may rightfully be called the father of the siphon closet.

There was one fault, however, with Waring's weir closet called the "Dececo," it came near killing it commercially and prevented its adoption in many places; it would become air bound between the water seal of the closet and the weir below the floor, but this was mostly due to the faulty construction of the tanks used, or defect of the weir. With a properly regulated flush from the tank it did and will work as well as most of the siphon closets made at present time. The weir below the floor is detrimental to the installment and the closet has been shelved as a relic of antiquity.

In 1885, W. Bunting, Jr., and the Myer Sniffin Co., followed with a siphon closet with two pipes from the flush tank and a double trap. One of the pipes was for flushing the closet and the other for exhausting the air between the two traps; the space between the two traps became then the long leg of the siphon. It was not as simple as Waring's; it cost more money and the arrangement had a comparatively short life commercially.

In 1887 I designed a simple form of a siphon closet, which did away with the weir below the floor, brought the complete closet above the floor line, could be operated with effect without a jet. It

WARING SIPHON CLOSET, 1884

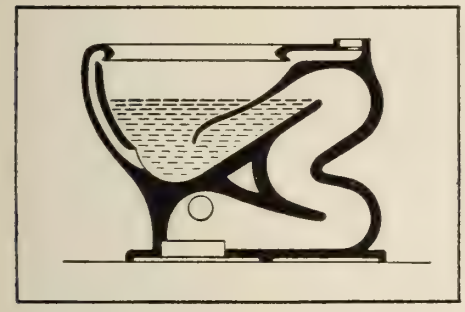


BUNTING SIPHON CLOSET, 1885

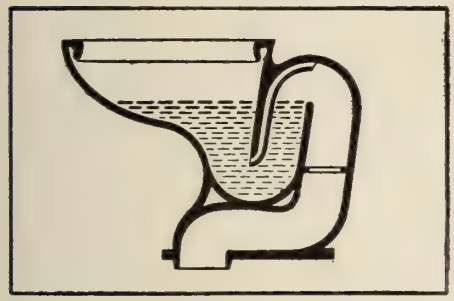
also solved the problem of complying with the then existing laws of New York, which requiring all closet outlets to be vented above the floor line, which had been considered impossible to accomplish in a siphon closet, on account of the short space left above the floor line for

the long leg of a siphon. This left the entire field to the washout closets, practically prohibiting the use of siphon closets.

My arrangement was a very simple affair. The results were brought about by making a very short bend at the top of the long leg, so that the water falling over the lip from the short leg would strike on the outer wall of the long leg, thereby making what may be termed a closed air chamber at the top of the long leg in which was created a vacuum by the descending water. A jet of water falling from a 5-ft. high tank raised the water in the top of the short and consequently also in the top of long leg of the siphon, reducing the air space of that chamber and creating almost instantaneous siphonic action.



SCHMIDT SIPHON CLOSET, 1887



FRAME & NEFF SIPHON CLOSET, 1890

The closets of to-day embody the two features mentioned, namely, the short bend or projection on outer wall of the long leg to deflect the water or zigzagging it across the outlet passage and the jet. We have, therefore, been standing still these last 20 years as far as siphon closet structure is concerned. The number of patents on record since, for siphon closets, cover minor details only, and are not at all essential. In a patent issued to Tildon in 1906, the illustration shows a closet without a jet and a vertical straight outlet passage or long leg of the siphon with an enlargement or chamber in this outlet. He states his object is "to pass successfully obstructive materials of considerable mass through the outlet of the closet."

Would not the obstructive material mentioned by Tildon be liable to give a great deal of trouble below the closet? Is this not wrong? Should we not endeavor to accomplish just the reverse? Should we not try to prevent the obstructive material from entering in or passing below the closet, but arrange to break up the mass or lumps in the closet and dissolve them as much as possible while they are passing through the long leg of the siphon, so that they will flow in a diluted state through the soil pipe into the sewer, instead of having the lumps lodge in the soil pipe to stick, unless removed by subsequent flushes before they become hardened?

I am taking up the features shown by Tildon in his patent simply as a foundation, since his illustration shows a closet without a jet and with a vertical outlet passage or long leg. Both of these features are a step in the right direction to simplify the siphon closet. Tildon's arrangement, however, is defective and can be improved upon. He is entirely wrong in his description as to the course the stream of water will take descending the long leg or outlet passage. His description is based upon the period when siphonic action is already taking place.

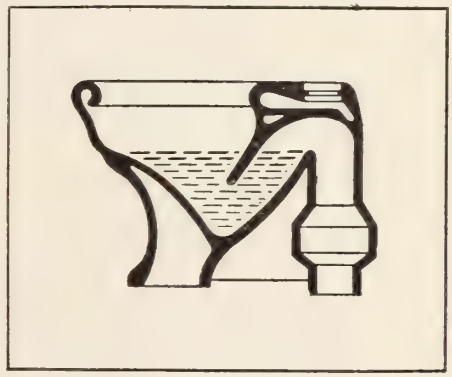
Our first and most important consideration is the period at the beginning of the flush and we must aim to establish siphonic action by the descending waters quickly and with as small a quantity of water as possible. We must also avoid construction which will have a choking effect upon the descending water. Tildon depends on the choking effect to create siphonic action.

The quantity of water of a 1¼-in. flush pipe falling from a closet tank elevated 5 ft. above the closet, or of a 2-in. diameter flush pipe from a low-down tank, will only fill the cross-sectional area of a 3-in. pipe about one-half and in reality will follow in Tildon's closet the wall of the outlet or long leg of the siphon by reason of cohesion induced by a vacuum which is created by the descending water between the pipe wall and the water until it strikes the bottom of the enlargement on the inner wall. It is then deflected against the outer wall, sealing the outlet against the egress of air from below by a sheet of descending water. It is not until then that the exhaustion of the air from the space formed in the long leg of the siphon begins and siphonic action does not begin until this air is nearly exhausted. It is, therefore, essential and of importance to have this air space at the top of the long leg of the siphon as small as possible to obtain quick siphonic action and before wasting the flushing water without obtaining results.

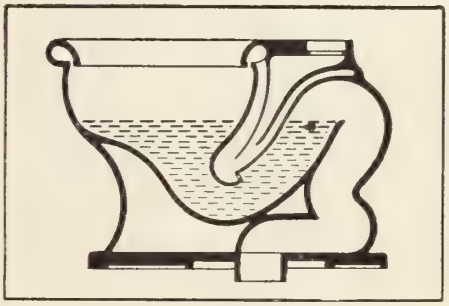
The change to the low-down tank has been a decided improvement; it has, however, robbed the jet of the closet of its usefulness, and since no change has been made in the closet to compensate for the jet, we have to-day a less effective siphon. We can readily double its effectiveness by carrying out the following:

First.—Increase the length of the siphon leg by extending the deflectors to the ferrule below the floor line and to the bend, sealing the outlet passage against the egress of the air from below at the bend. By doing this we nearly double the length of the siphon leg and consequently increase the efficiency of the siphon over 50 per cent.

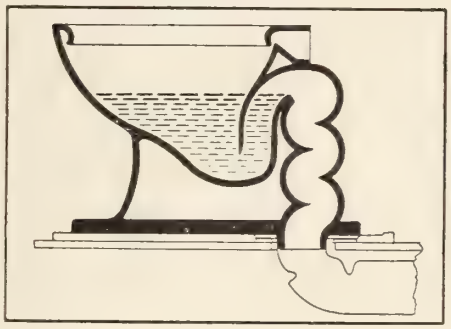
Second.—The outlet passage of the closet should be vertical, or nearly so—this will reduce friction and insure a quicker flow of the descending water.



TILDON SIPHON CLOSET, 1906



RHEAD SIPHON CLOSET, 1907



SCHMIDT SIPHON CLOSET, 1909

Third.—Deflectors should be formed in the vertical outlet passage of the closet, which will cause the stream of the descending water to zigzag across the outlet passage at as short intervals as possible, and at such angles as will retard the flow of the water as little as possible. The choking effect produced by a ring or cup should be avoided.

By doing this we will get the following results:

1. The excreta will become dissolved by the churning effect of the water, caused by the deflectors, and the closet discharge will enter the soil pipe in a practically dissolved state.

2. The change from high to low-down tanks will not decrease the efficiency of the closet.

3. Discarding of the jet will simplify the making of the closet.

4. All of the water from the tank can pass through the rim, increasing the cleansing effect in the bowl and carrying more air from the room into the pipes.

5. The closet can be operated with less water, if desired, which is quite an item in some localities and septic tank systems, especially where the sewerage has to be pumped to a high level, although I am an advocate for plenty of water for flushing the closet, and for sending the soil diluted into the sewer, but I am opposed to wasting water.

6. With the long leg extended, a 3-gal. flush will become as effective as the present 5-gal. flush.

7. A vertical outlet passage in the closet will also reduce the distance to the soil pipe fitting; in the stack horizontal branches should be as short as possible.

Hot Water System Used to Filter Oil

J. F. Bennett Describes a Heating Wrinkle in the Plumbers' Trade Journal Which Ought to Interest Heating Contractors in Canada, as a Heating Job in Quebec is Referred to.

Outside of hot water for heating dwellings there are other wrinkles by means of which hot water may be used for other purposes such as heating chicken houses, incubators, tanks, etc.

A case in point: An engineer of a large power plant in which both steam engines and gas engines were in use, desired an easy method of filtering oil. The steam plant was in use during the Fall, Winter and Spring months of the year, the exhaust steam from the engines being utilized for heating purposes. A large group of buildings were heated by hot water which was heated [illegible] by exhaust steam from the engines.

When the heating season was over the gas plant was operated solely for power and lighting purposes, no heat being necessary. The gas plant, if anything, used more oil than was used in the steam plant, so it was necessary to filter the oil, The engineer had several types of oil filters for the different kinds of oils. One which he desired to use consisted of a tank partitioned into two spaces, one for oil, and the other for water. The water space contained a heating coil made of ⅜ inch brass pipe, by means of which, if a steam connection could be had, the water could be heated to any desired temperature. When there was no steam, however, the filter was, of course, out of commission, but it was necessary, nevertheless, to filter the oil. As it was neither convenient nor economical to raise steam to supply the filter, the next step, obviously, was to convert it into a hot water heating system on a small scale.

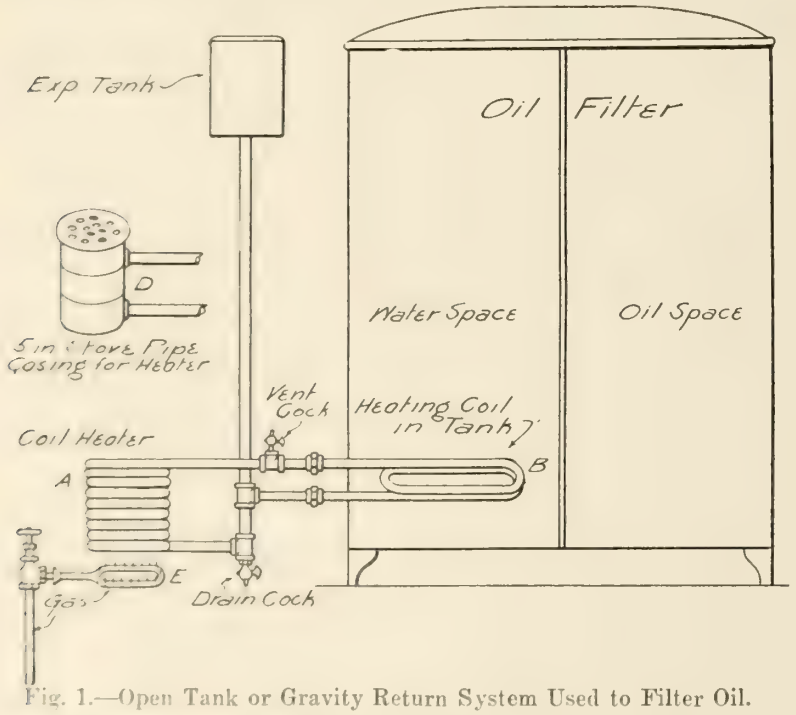


Fig. 1.—Open Tank or Gravity Return System Used to Filter Oil.

The open tank, or gravity return system, was employed with satisfactory results. It was piped substantially as shown in Fig. 1. The coil No. A, was made by bending a length of ⅜ inch galvanized pipe around a piece of 3 inch pipe which was used as a form to bend the coil on and the rings of the coil were close together. The top of the coil was connected to the feed or flow pipe of the heating coil B in the tank, and the bottom to the return.

An expansion pipe C was taken from the return and carried up about thirty inches. A galvanized iron can, quart size, was placed on top of the expansion pipe. It was held in place by lock nuts inside and outside. It was vented or relieved of air by the pet cock on the feed pipe, the highest point. The pet cock on the return was used as a drain or blow-off cock. The heater was enclosed in a length of 5 inch stove pipe with a perforated top or cover. A gas burner, E, was placed beneath the heater coil. This was made from a piece of ½ inch gas pipe bent to fit rings in the heater coil with 1-32 inch holes drilled ½ inch apart all the way around. A gas mixer and valve gave a nice blue flame.

When the gas was lighted and the little system filled with water, it was ready to operate. It proved satisfactory, as the circulation was rapid and positive, and the gas flame was easy to regulate. The expansion tank being in plain view, an overflow pipe was not necessary. As long as the system was vented and water showed in the tank, the coils were filled and an occasional cup full of water compensated for such evaporation as took place.

The filter and heater being connected made it a portable filter, and it could be moved to any desired point where a gas connection was accessible, to which a rubber tube or pipe connection could be made. Simple and comparatively inexpensive describes it.

The coil A as described, and shown in Fig. 1, is easily made and may be bent cold. It requires a piece of 3 inch pipe in a vice, over which the coil is bent. The bending is done by means of two pieces of ¾ inch pipe. The ends are then wound or bent around the pipe in opposite directions. As the coil bends around the 3 inch pipe the ¾ inch pieces are slipped along a little at a time until the ends are reached. The seam of the ⅜ pipe should of course be kept on the inside of the coil or bend. The ¾ inch pieces if properly used, enable the coil to be bent closely around the 3 inch pipe, and there will be spring enough in the coil to enable it to slip off easily after the bending is completed.

A coil of this size and type, if encased in a jacket such as a piece of 5-inch stove pipe lined with sheet asbestos, with a perforated sheet-iron top, or lid, will give a lot of heat and may even be used to heat water in small tanks of from 5 to 10 gallons capacity.

The writer knows an office, a detached building, where they desired hot water for lavatory use. They desired it on a cheap scale, as they considered a water heater to be a rather too expensive luxury. They had a ten gallon galvanized range boiler or tank which had been used as an air reservoir. The tank was in good condition. The office was piped for gas. A coil such as described above was used and connected to the bottom of the tank. Any heat not utilized in the coil came into contact with the bottom of the tank. The tank was supported by an inch pipe from the bottom of the tank to a floor flange resting on the floor. The end at the flange was plugged. The cross on this pipe had a connection from the side to the return end of the coil. On the opposite side of the cross a hose bibb was placed for drainage purpose. This arrangement, if the gas was not checked, would heat the water hot enough to generate steam in the tank. A small flame at the burner heated all the water required and heated it as hot as they required it. After three years service it is still producing satisfactory results.

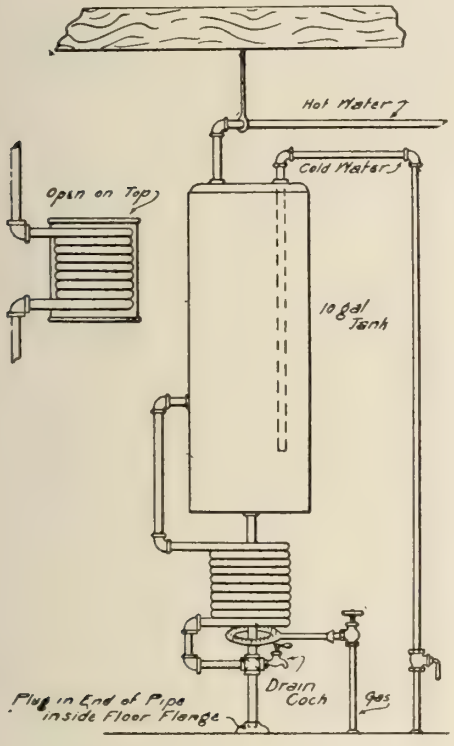


Fig. 2.—Tank, Burner, Coil and Connections.

Fig. 2 shows the tank, burner, coil and connections, also jacket, detached, at the side.

There are many places not fitted up for hot water supply, where a little scheme like this will furnish a moderate amount of hot water at a nominal cost for gas as fuel. It can also be adapted for chicken houses, incubators, etc., where it may be desirable to heat on a small scale by hot water.

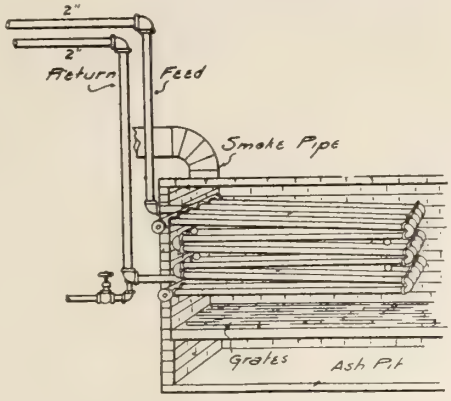


Fig. 3.—Boxcoil, Encased in Brick Used as Heater or Boiler for Hot Water System.

There have been many types of boilers or heaters made of wrought iron pipe and fittings, but a novelty of the old style was a return bend box coil enclosed in brick, with grate bars underneath on which wood was burned. This was in the province of Quebec, and it supplied four radiators and a small coil, about 260 feet of radiation, with hot water. A safety valve set to blow at ten pounds was placed on the overflow pipe from the expansion tank. The branch tees were back outlet manifolds. The feed was taken from the top header and the return was connected into the bottom header or manifold. It heated to the owner's satisfaction and is said to be taken from an old English system of circulating water. The writer does not recommend it, merely mentioning it as an illustration of one of the many freaks to be met with by one who has put in many years at the steam and hot water heating trade. See Fig. 3.

Gossip of the Plumbing and Heating Trade

Items Gathered in all Parts of Canada—Letters Invited From Subscribers, Giving Particulars Regarding Changes in Firm Names, Contracts Secured, Novel Methods of Advertising or Other News—Photos of Anyone or Anything Connected With the Trade Also Welcomed.

The assets of Lessard & Co., plumbers, Montreal, have been sold.

The assets of H. Riendeau & Co., plumbers, Montreal, have been sold.

N. Breton, plumber, Montreal, has assigned.

J. Greenough, plumber, Montreal, has dissolved.

Hall & Cordeau, plumbers, Rock Island, Que., have been registered.

J. Dessert & Fils, tinsmiths, Roxton Falls, Que., have dissolved partnership.

Poitras & Bourque, plumbers, Montreal, have been registered.

Reihl, Barkwell, plumbers, Yorkton, Sask., have discontinued business.

W. E. Pollard, tinsmith, Fonthill, has sold his business to W. S. Dougherty.

Geo. Chapple, Grand Forks, B.C., has sold his plumbing business to G. W. Cooper.

John Barron, tinsmith and stove dealer, Milton, has assigned. A meeting of creditors was held last week.

W. J. Maguire & Co. will install the steam heating plant in the Allan Gardens palm house, Toronto, at $3,970.

J. E. Devereux, of the Empire Brass Co., London, is out of the hospital again, after a two weeks' sojourn through illness.

Fred. Smith, 1381 Dundas Street, and Bob McKay, 894 Queen East, are two Toronto master plumbers laid up through illness.

The Canada Metal Co., Toronto, have secured property in Winnipeg and expect to open a plant there in the near future.

H. G. Boggs, president of the Brown-Boggs Co., Hamilton, manufacturers of tinsmiths' tools, died during the closing days of July.

The assets of F. Belanger & Co., plumbers, Ville Marie, Que., and of the Ville Marie Plumbing Co., of the same place, are to be sold.

The members of the International Association of Steamfitters, of Toronto, held their annual excursion to Beaverton on Aug. 13.

The contract for supply and instalation of heating plant in the Wainwright, Alta., school was awarded to McKnight & Frost, Edmonton, at $2,649.

The assets of C. R. Bowers & Co., plumbers, Chatham, Ont., were sold at a sheriff's sale on Aug. 2, to Geo. Bowers, at 65 cents on the dollar.

The Colbert Plumbing & Heating Co will commence work immediately on the erection of a two-storey brick and crete warehouse at Victoria, to cost $8,000.

S. M. Morton & Co., Edmonton, have been successful in securing the contract

for the plumbing in the Royal Alexandra hospital, which is being erected at Edmonton.

The Garth Co., the well-known Montreal plumbing supply house, have changed their west side quarters to handsomely fitted up premises at 558 St. Catherine Street West.

The Waldon Heating & Engineering Co., of Winnipeg, had a splendid exhibit of many furnaces and boilers of a variety of types, at the Winnipeg exhibition.

S. P. Gourlay has secured the contract for the plumbing at the Nurses' Home, St. Catharines, and John Peart has obtained the contract on the new addition to the hospital.

Edgar T. Needham, 1167 Dundas St., Toronto, has disposed of his hardware stock and will devote his attention exclusively to the plumbing end of his business in future.

Lowden & Mead have opened premises at 13 Bleury St., Montreal, for the sale of electrical specialties. W. C. Ryan, electrical contractor, is associated with them in the same place.

J. E. Grey has been given the contract for installing a heating plant in Agnes Street police station, Toronto, at $892. Gentle & Travis will do a similar job at Yorkville Avenue fire hall for $1,170.

W. Linton distinguished himself as a cricketer at the reunion of the East Toronto Cricket Club last week. He made 25 runs—the highest scored—and 14 batsmen faced him before he was finally stumped.

C. J. Young, formerly in the electrical department of Henry Morgan & Co., has joined the staff of the Bleau Gas Co., at Montreal. The Bleau Gas Co. have taken nice offices in the Jacobs building, and have attracted much attention by their up-to-date business methods.

The trouble between the Canadian Northern Ry. Co., and its steamfitters at Winnipeg has been settled, and the men, who have been on strike for some time, have returned to work. It is understood the men will receive an increase of five cents an hour all round.

Walter E. Boddington, a Toronto master plumber, has his house at present quarantined through his little girl being afflicted with diphtheria. Mr. Boddington himself has just recovered from a serious illness.

Sam Ryding, of S. Ryding & Son, 1904 Dundas Street, West Toronto, has turned over his business to his son, and will in future look after the interests of the Monarch Brass Co. in the west end of Toronto.

Edgar Bloxham, representative of the Taylor-Forbes Co., Guelph, at Paris, France, is on a visit to Canada conferring with the principals of the company regarding export business of boilers and radiators to that country.

The Plumbers' and Steam and Gasfitters' Union, of Toronto, will hold an excursion to Victoria Park, Cobourg, on Saturday, Aug. 20. A baseball match between the journeymen and master plumbers is being arranged.

Owing to an error in the Honeywell Heating Specialty Company's advertisement last issue, the telephone number of Frank T. Rawley, Montreal, Canadian manager, was given as M 4695; it should have been M 4615, as is shown in the present issue.

W. H. Darling, representing Canadian Wolverine Company in western Canada, was in Winnipeg last week, on his way east, after a six weeks' tour of the west. Mr. Darling, on making his calls, never fails to drop a word about the big plumbers' convention in Toronto, beginning August 31. He is anxious to arrive in Toronto on time and meet all the boys.

The 17th annual convention of the United Association of Journeymen Plumbers, Gasfitters, Steamfitters and Helpers, of the United States and Canada, will be held at St. Paul on Sept. 19. About 300 delegates are expected. J. W. Bruce has been appointed delegate to represent Toronto union at the convention.

A. Welch & Son, plumbers and stove dealers, 304 Queen Street, West, Toronto, have purchased the adjoining two stores, paying therefor, $52,000. The property measures 60x190 feet. This additional property will give the firm a frontage on three streets. It is their intention to alter and remodel the whole block for their own use.

The Ottawa Plumbers' International Union has elected the following officers for the current terms: President, J. Hurtubise; vice-president, J. J. Barrett; secretary, E. Cadieux; treasurer, S. Doughtry; delegate to the International Union convention at Minneapolis, J. J. Smith; delegates to the Trades and Labor Council, E. Cadieux, J. Hurtubise and C. Smith.

There was a meeting of Ontario soil pipe manufacturers at Toronto last Thursday, called to discuss trade matters. Owing to the smallness of the attendance no business was done, the meeting being adjourned for a week. The Standard Ideal Mfg. Co., Anthes Foundry Co., Toronto Hardware Mfg. Co., Toronto, and the Farwell Foundry Co., Berlin, were the only companies represented.

The Garth Co., of Montreal, have been awarded the contract for plumbing, steam heating and ventilation in the Chateau Laurier hotel, at Ottawa, one of the largest fireproof buildings erected at that place. They have started work on the building with a large staff of mechanics. The job promises to be a very elaborate one. The Garth Co. has also been awarded the contract for the plumbing and heating of the new store for the A. E. Rae Company, Montreal.

At a recent meeting of the Master Plumbers' Association of Montreal, it was decided to ratify the committee's report on the affiliation of the association with the Montreal Builders' Exchange. By this arrangement members of the association become associated members of the Exchange, with full rights and privileges. These include permanent office and rooms for the association, exhibition of building materials, reading rooms with papers and catalogues, and financial reports when requested by any member.

The northwest district convention of the United Association of Journeymen Plumbers and Steamfitters was in session all last week in Vancouver. Delegates were present from practically every industrial centre in the jurisdiction, including Butte, Portland, Spokane, Bellingham, Seattle, Tacoma and other scenes of the lead-pipers. The delegates were tendered the freedom of the city by Mayor Taylor on the opening day of the convention, and the local entertainment committee filled in every moment of the spare time at the disposal of the visitors, endeavoring to acquaint them with the beauties and hospitality of Vancouver.

The Booth Copper Co., of Toronto, and Wm. Coulter & Sons, brass manufacturers, Toronto, are to amalgamate, and an application will shortly be made to the Ontario Government to grant a charter to the Booth-Coulter Copper and Brass Mfg. Co., the name of the amalgamated concern. The capital will be $1,000,000. No change will be made in the personnel of either companies for a while, at least. Coulter & Sons' brass works on George Street will be closed and the machinery transferred to the larger premises of the Booth Copper Co., on Sumach Street.

A charter is being applied for by a company under the name of the Steel and Radiation Company, Ltd., with a capital of five million dollars, for the avowed purpose of taking over the Expanded Metal Company, the King Radiator Company, the Dominion Radiator Company, all of Toronto, and the Taylor-Forbes Co., of Guelph. The promotion of the company is in the hands of Grant Hugh Brown, and the directorate is composed of Sir Henry Pellatt, Wallace Near, of the Page, Hersey Co., Welland; M. J. O'Brien, Thomas Horne, R. J. Cluff and G. H. Brown.

The proposition is said to be to take over the Expanded Metal Co, and the

King Radiator Co. first, giving them shares in the new company, and when this is done, to gradually take over the other plants.

The King Radiator Co. discussed the matter at a recent meeting and a committee appointed to secure details. It is said that 51 per cent. of the company's stock is pledged to the merger, although this is denied. It is also stated that bonds are to be issued to the amount of $500,000, and that a million dollars in stock will go to Mr. Brown and his associates for promotion purposes.

Interviewed by The Plumber and Steamfitter, both Adam Taylor, of the Taylor-Forbes Co., and Peter McMichael, of the Dominion Radiator Co., deny the statements that their companies are included in any way in the proposition, stating that they do not know Promoter Brown, and have given no options to Mr. Cluff. It is also said that the names of some of the proposed directors have not consented to act in that capacity.

While a merger of three or four radiator concerns would be feasible, a combination of radiator and metal window companies does not offer the same chances for savings in management, etc.

It is pretty safe to say, too, that if the Dominion Radiator or Taylor-Forbes Companies transfer their business at any time, it will be on a cash basis. In fact, the former concern is understood to have refused an offer to sell to the American Radiator Co., the consideration being stock in the latter company. As minority shareholders in the Dominion Radiator Co., the officers of the Taylor-Forbes Co. are not likely to consent to enter a deal whereby their experience as minority shareholders would be enlarged.

PLUMBERS PLAY BALL.

The third baseball game of the season between the Toronto master plumbers and the supply houses' traveling salesmen was played on Saturday, Aug. 6, at the Dufferin Driving Park, Toronto, with the usual result—the master plumbers winning by the close score of 14—13. There was a large attendance of friends of both contestants, and much interest was manifested in the game.

The players' line-up was as follows: Master Plumbers — E. Needham, C. Hicks, D. Menzies, Hayes, W. Shultz, R. Shannon, Stevenson, Saeger and Glynn. Supply Men—Bakemeyer, Donnelly, McAlpin, Creller, Worthington, F. Quinn, T. Dobie, J. Bell and Kingswood. Hayes and Menzies were the battery for the plumbers, and Donnelly and Creller for the supply salesmen. The umpires were W. Copping and G. Abbott. G. F. Frankland and M. Duncan were scorers.

The hosts of the afternoon were the master plumbers, and they looked after the welfare and pleasure of their guests in a royal manner. Soft drinks and cigars were dispensed, and Chairman Passmore surprised the crowd by introducing the "little German band," which played all the popular and unpopular airs during the afternoon. Later on Dinny McMullen brought along his famous "plumbers' band," which Jack Owston caught with his camera before they had time to escape.

For the diversion of those ball players who had soft hands a "ladies' game" was organized between Holt Gurney's "Beauties" and Geo. Cooper's "Ponies." They played the game to the music of the orchestra. The teams were made up as follows: "Beauties"—Gurney, Cunningham, McMichael, Martin, Cruickshank, Wattam, Jury, Hocken and Webb. "Ponies"—Herbert, Locke, Cooper, Strutt, Cadieux, O'Hagan, Hicks, Thomas and Atkins. Dinny McMullen was umpire, and S. T. D. Hadley kept the score.

At first it looked as if the heating men were going to win, but, aided by the umpire, who is himself a master plumber, the "Ponies" soon outclassed their antagonists, as the score of 115—112 shows. The errors were not counted.

TORONTO MASTER PLUMBERS' BAND.

They play fairly well, but not good enough to be allowed on the moonlight at the coming Convention.

AT THE FREE LUNCH COUNTER. Sam Ryding, "Pop" Anthes and F. McGrath, after being "Called to the Bar."

After posing for a number of pictures, the crowd dispersed. The supply men promise a return game on Sept. 17, but as yet arrangements have not been completed.

High Flies.

Jack Passmore and Dick Crashley made splendid waiters.

Through Dinny McMullen's winning the first game for the plumbers, he was made to do the honors of umpiring the "ladies' game."

Patriotic music by the plumbers' band livened up the afternoon's proceedings.

Holt Gurney, Frank Webb, Geo. Cooper and Harry Hicks were the big noises at the "ladies' game."

The plumbers' old-time battery, Pat Hayes and Dave Menzies, were on the job again, and did very effective work, Dave playing in his stocking feet. Dan Glynn, Jr., relieved Hayes in the box towards the end of the game.

Charlie Hicks, as a third-baseman, needs some more practice with a lacrosse stick, while Wm. Schultz wants a little more ginger in his make-up.

M. Duncan, of the Dominion Radiator, ably assisted the plumbers to win by his good scoring.

J. Bakemeyer, of Canadian Wolverine Brass, found it impossible to knock out the home runs he usually does, with such a battery against him, and he was disgusted with Ed. Needham catching them off the bat and spoiling the good ones.

REMOVING RUBBER GASKETS.

Editor Plumber and Steamfitter,—When a large main, say a 6-inch steam main, is well anchored in place and refuses to "give" any and it is desired to put in a rubber gasket in a flange along [illegible], how can one proceed to do it in an easy and mechanical manner without tearing things all to pieces? Please answer in the next number of the paper.
Toronto, Aug, 5. M. L.

We should have the new gasket already cut before we started on the job. It could be marked out on a piece of rubber and cut with a knife, or the rubber laid on half of a flange and the gasket cut with a machinist's hammer or the gasket cut with a gasket and washer cutter. (A new device for this purpose is being marketed by J. A. Rose, Hast[illegible], Nebraska.) We would then proceed to block the steam for about three quarters of an hour and then take out the bolts of the flange. Then take an old saw and start sawing downward on the gasket, that is in the flange, and which is to be removed. When you are about half way through, and before the force of the main tending to make the flange comes together, gets in its action, drive a small cold chisel into the top of the flange in such a manner that it will hold the distance that you have gained in sawing out the old rubbee gasket. When the saw has passed all the way down you can try to clean the faces of the flange by using some emery paper on them, but this will be rather a difficult matter from the lack of room. The new gasket can be pulled to its place by fastening a string in one side of it and gradually drawing it to its place, after which the flange may be bolted up again. Do not pull any one bolt down tight first but gradually tighten on them all. —D.H.C.

TAKING OFF A BRANCH.

Editor Plumber and Steamfitter,—On a hot water job should the branch to supply the radiator be taken off before the right angle turn is made on the main, or after, which? To put it shortly, would you run the branch before or after the corner?
Montreal, Aug. 7. S. L. R.

We should think that this would depend largely on the lay of the job. However, we do not believe that we should "fret" so very much about that "corner." The point that we should look after in a careful manner would be to see that the branch had the fewest number, possible, of crooks and turns and we would try to get the water from the boiler to the radiator with the least amount of travel that we could, believing that this point would have a more beneficial action on the job than the location of the branch in regard to the "corner." In making these remarks we have to take it for granted that you know how to figure the sizes of both the mains and the branches. Generally speaking, you may take it for granted on hot water heating that the easier you can make the travel for the heating current, the better results you will get for the house owner. The simpler the job the better for all concerned.—D.H.C.

TRADE PROBLEMS ANSWERED.

Inquiries Solicited From Readers, Who Run Across Problems Which are Unusual—Just as You are Interested in Reading the Questions Asked by Another Man in Your Trade, so Will the Other Fellow be Interested in Your Problems—Send the Queries Along and We'll Answer Them—or try to.

AMOUNT OF VACUUM DEVELOPED

Editor Plumber and Steamfitter.—What is the greatest amount of vacuum you have seen on a job? Is it better to carry say 18 or 2 inches?
Hamilton, Aug. 2. X

The greatest vacuum we have seen on a working job is 16 inches. We have heard many times about people getting 25 or 26 inches but we have not been fortunate enough to see it on a practical job.

We believe that some of the best engineers of the day are advising that it is better to carry 2 than 12 inches, considering that the steam or vapor is not passed through the radiators so rapidly at 2 inches and that there is a better opportunity for the heat to be radiated. —D.H.C.

WEIGHT OF RADIATION.

Editor Plumber and Steamfitter,—Can you give me any idea as to how much a foot of radiation will weigh? Also, if possible, I would like to have you tell me how much water a foot of radiation will hold?
Winnipeg, Aug. 3. M. M.

This is a question that some of the heating books do not seem to have much data upon. It would, of course, depend somewhat upon the make and the style of the radiator. We believe, however, that we would be safe in stating that a foot of cast iron radiation would weigh about seven pounds, possibly a trifle less or a bit more according to the radiator, whereas about a pint of water to the square foot would be a fair estimate as to the quantity of water contained.—D.H.C.

LOCATING LEAKS.

Editor Plumber and Steamfitter,—I have been bothered like sixty of late by an unusual number of leaks on the work done. Can you suggest any way of getting rid of them and any short method of locating small leaks.
London, Aug. 8. READER.

Assuming that your fittings and dies are standard, we would suggest that you look over the tools first, the workmen second. See that the dies are in good shape and that they will cut good threads, if pains are taken. Then insist that the men do the work in a proper manner. Give them good wrenches so that they can put the fittings "home." The preventing of the leaks is much easier than the cure. Large leaks will show themselves, but a small leak is better located after the manner of locating gas leaks. Put an air pressure on the job and go after it. Lots of times when you can not depend upon either the tools or the men it is cheaper than to take chances and trust to luck. Many times small leaks can be cured by calking the leak with tin foil. The best way, though, is to be absolutely sure of your men and the tools. In that way you will seldom have any leaks on your hands, other than a cracked or porous fitting.—D.H.C.

DESCRIPTION OF GARAGE JOB.

Editor, Plumber and Steamfitter.—I enclose a sketch of plumbing and heating, installed in a garage building, in Rockcliff Park, Ottawa, by correspondent, which may prove of interest to readers, and also showing additional work coming to the trade in the installation of a Bowser gasoline tank and pump, tank of a capacity of 147 gallons with a 1¼ galvanized pipe to pump.

The heating consists of No. 3B Gurney boiler supplying 410 feet of direct radiation.

Plumbing consisted of two enameled wash basins, one five foot six inch bath, one wash out syphon w. c. with high tank, supplying same, and feeding hot water boiler, and a 30 gallon range boiler connected to boiler, with hot and cold water connected to all fixtures, and also two cold water connections for washing purposes.

The building is of a very nice architectural design, built of Nepean stone, all inside walls finished with gray smooth finish brick, and ceilings plastered, with a galvanized fibre cornice in front of same, and a slate roof.

Ottawa, Aug. 2. J. C.

System in a Large Metal Working Shop

Work Sheet and Time Card to Take Care of Time and Material Used on Jobs and Estimate Blank for Figuring on Contracts Described by B. F. John, In the "Sheet Metal Shop."

The sheet metal worker, including the roofer, furnace and range contractor, and sheet metal contractor, in the vast majority of cases occupies his position as an individual business man by sheer grit, and in many cases, after having attained the position as an employer, still continues to use the tools side by side with his men, possibly out of habit or necessity, and in many cases against his immediate business interests, failing to realize that in so doing he is neglecting a portion of his business career that needs to be fostered equally as much as the actual performance of his work, and which is as arduous a task as and possibly more so from his view than the other, and a good deal less profitable to his way of thinking.

But as the business grows he begins to realize that one of the most potent influences toward creating a successful business career is his "desk work" and "shop records," and too often a hastily "thrown together" system is established, which proves a source of unending worry and loss on account of its many defects, because it admits a state of affairs where memory plays an important part and has but a poor chance against a well-regulated, although simple, system.

It is not to be supposed that upon entering business an expensive system of books or the service of an expert accountant is necessary, yet it is possible at a small expense that the average beginner, or even some who have been in business quite a period, can adopt a system of "shop records" to their profit, no matter how small may be the number of customers.

To better illustrate this need one case comes to mind where the workmen return loose leaves torn from a blank book, on which is written the sum total of

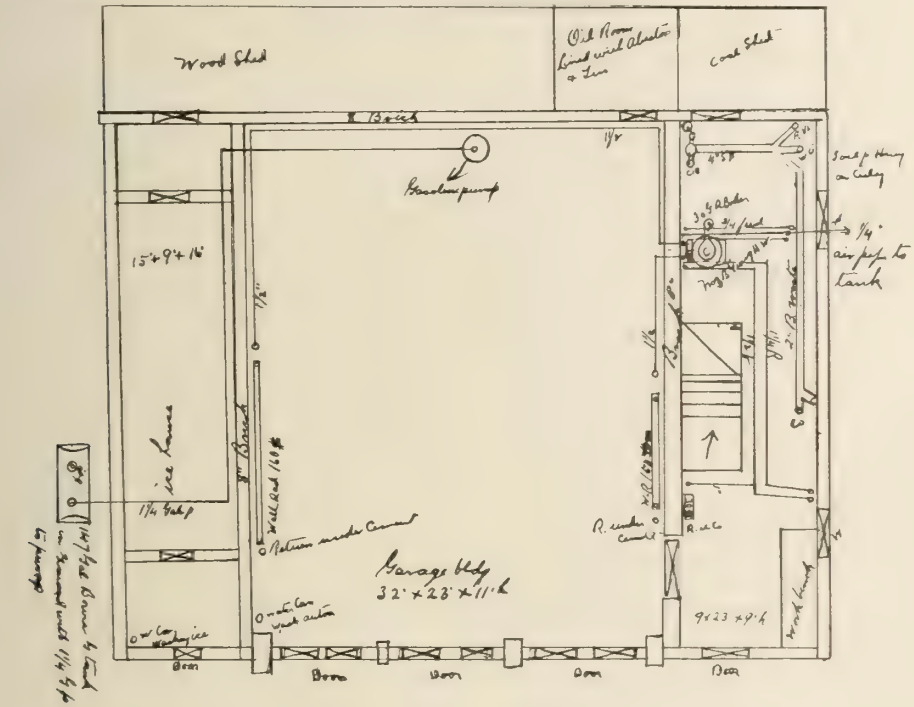


Fig. 1.—Ground Floor.

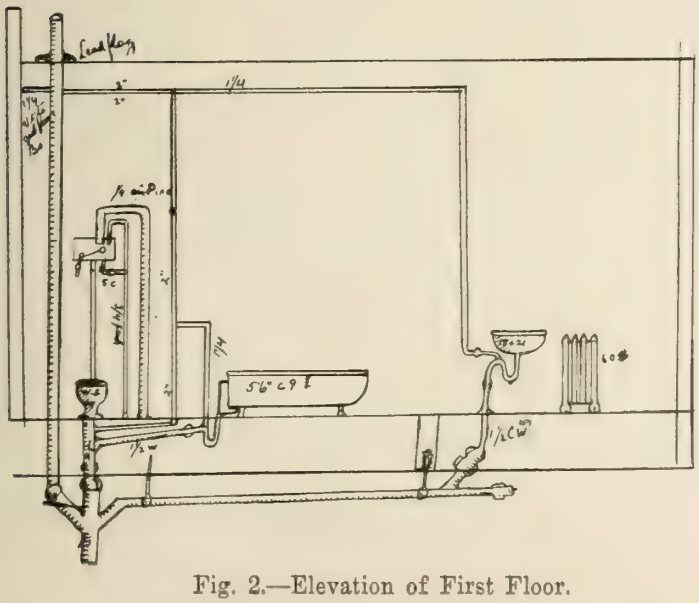


Fig. 2.—Elevation of First Floor.

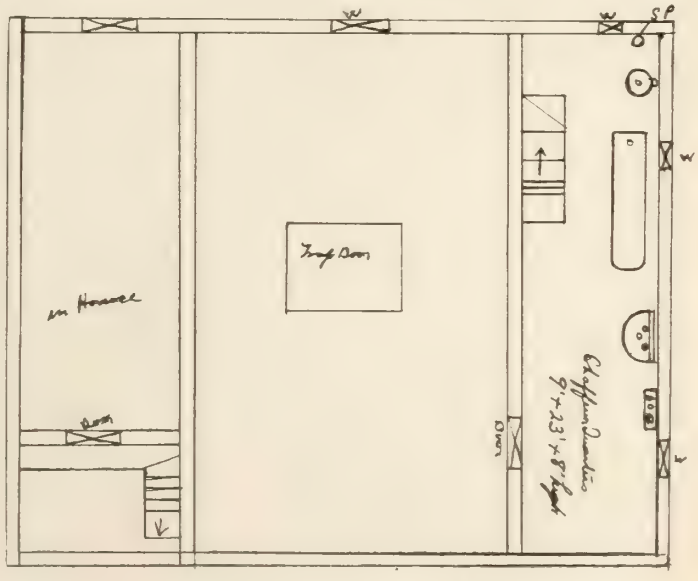


Fig. 3.—View From Above.

time and material for an entire week's jobbing work for possibly fifteen or twenty jobs. Every one can realize the loss sustained, as upon this crude method is built the very strength of the business.

It is at once apparent, therefore, that unless the employer throws a checking system about his labor and material, the loss, from the lack of one, is great. It may be that this loss consists of "mere trifles," yet the sum total of these in one year would show quite a neat balance on the right side of the "profit and loss" account, and it follows that a careless method in small matters will result in the same way to neglect in larger things.

To keep an accurate account of that which belongs to one and to whom it is sold is the proper thing to do, and the business man who does not do this leaves his purse strings open and endangers his business.

For the benefit of those who have not taken the time to figure it out, the following simple and inexpensive system, taken from an excellent system now in use, is offered.

Two well-bound, ruled order books of 250 to 500 numbered pages each will be required, one labeled "Roofing," the other "Furnace and Range and Sheet Metal Work." Into these are entered daily the incoming orders under the date received, whether verbal or by mail, and if by mail, placing on the letter before filing a small pencil figure of the page on the order book. This gives a ready reference to the date received and to the entry when referring to the order and to the entries of contracts from the estimate blank taken from the file.

One of the first things to consider is the "estimate blank" and "file." How often it occurs that what we wished most to remember is soonest forgotten. A simple estimate blank is shown in Fig. 2

An exact copy of specifications always repays a hundred fold.

After the estimate is made up and letter copied and sent, a small rubber stamp of the copy book page, date of letter and estimated price can be placed on the bottom of the estimate sheet. This at a glance gives a thorough outline of the proposed work, and a ready reference during the performance of the contract. It is, of course, necessary to use one of the many filing devices to alphabetically arrange these estimates, and it has been found that the street name taken as a basis of filing affords the best results. viz., Broad Street, file under "B"; Thirteenth Street, under "T"; Front Street, under "F," etc.

It is the common practices in all shops to group men on various contracts, placing in the hands of the foreman of the job all the knowledge possessed by the employer as far as material and labor is concerned, and for this purpose a "work sheet" is arranged with the name of the owner or builder, its location, and a clearly-defined explanation of the work. This sheet also contains spaces for material used and time consumed. In the case of jobbing shops these sheets are of inestimable value. A separate sheet, as shown in Fig. 2, is made out for each and every job, and contains in one corner the number of the page on which the original entry is made in the order book. A new sheet is handed to each man when he returns the previous sheet properly filled out.

In connection with this sheet a cheap blank book, 6 inches wide by 14 inches long, hung in a conspicuous place in the shop, to be used to enter the material and tools leaving the shop for each job, is an excellent check, especially if one person will see to it that the entries are made when the material is assembled to be taken to the job. A few minutes spent at that time will save a great deal of imagination by the mechanic should he neglect to give a complete return on the work sheet, and it serves as an elegant reminder to the person who figures the work from the time sheets. It also acts as a record as to where shop tools can be located, and as a check when the tools are returned. Another book can also be used if desired in which to make entry of material returned from each job. It is easy then to figure that the difference between the entries in these two books should equal the material charged on the work sheet.

JOHN R. DOE & BROTHER,

ROOFING RANGES & FURNACES SHEET METAL WORK.

At the completion of this work, the workman will fill out this blank with all the material used, and a correct account of each days time.

_____ 1910

OWNER _____

WORK DONE AT _____

TIN		Solder
		Coal
		Paint
SPOUT	ELBOWS	Oil
		Putty
		Nails
EAVE PIPES		Mortar
		Slate

WORKMEN	DAYS	HOURS Repairing	HOURS Painting	REMARKS

Fig. 1.—Form of Work Sheets.

Location _____

For _____

To _____ Cost _____

By _____ Date ____ Examined _____

Specifications:-

Material:-

Time:-

Fig. 2.—Estimate Blank.

WEEKLY TIME CARD JOHN R. DOE & BROTHER

Week ending _____ Time made by _____

Day	Date	Location of work	Hours
Saturday			
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			
		Total for week	

Fig. 3.—Time Card.

On jobs which require shop work a separate work sheet is used to record the material and labor. When the cornice, front, skylight or other job is completed this sheet is returned with the weight of iron, the number of sheets and their weight, number and length, as recorded when taken from the rack. This is held until the contract is completed and is then attached to the sheet in the hands of the outside workmen, when returned, thus giving a complete return to compare with the estimate blank, or to be charged.

The foregoing has dealt with material. By a few weeks' practice this method will prove easy and simple of application.

By referring again to Fig. 1, the "work sheet," the arrangement for keeping the time will be noted. This arrangement, on jobs of long periods, can be carried out on the other side of the sheet if necessary, days and date being recorded at the top of each column. The keeping of the time is left in the hands of the foreman of the "job" by the use of this sheet. Aside from this sheet and a time book, kept in the office, in which an entry is made daily following a visitation to the job, each workman is provided, on "pay day" or the beginning of each working week, with a card the size of a postal card, but heavier and self addressed to the firm, which contains spaces for dates and location of workman for each successive day of the week, as in Fig. 3.

These cards should be turned in or mailed on the evening ending the week's work, when a comparison with the office time book and "work slip" leaves no doubt as to the correctness or incorrectness of the time reported. This saves time and unpleasantness. After years of trial in a shop with a number of men employed, but one or two disputes have arisen, simply because this method was rigidly enforced.

A simple method of filing the work sheets is to obtain a vertical, two-pronged file, with a wooden back, and an ordinary perforator or two-hole punch. Each sheet being dated the day the work is completed, after being crossed from the order book, is entered in the blotter preparatory to figuring. It is then punched and filed, and at the end of each month the work sheets for the month are removed and sewed together through the punched holes and labeled with the month and year, and laid away for reference if needed. In this manner, in case of a disputed bill, by referring to the date in the ledger account of the customer, it is possible in a few minutes to trace the "root" of the charge. Presenting it to the customer invariably rights a wrong impression.

After a study of the foregoing it is possible to build a very efficient system upon it, and to adopt it to the correct checking of any and all work entering into our trades. It is also possible to elaborate this system to cover contracts of any size.

ARRANGEMENTS FOR CONVENTION.

A regular fortnightly meeting of the Toronto Master Plumbers' Association was held last Thursday evening in the Retail Merchants' Association rooms. About 40 members were present. Geo. Cooper was in the chair. The membership now shows a list of 95.

Mr. Cooper briefly recounted the arrangements already made for the convention, which will be held at the end of the month, and the various committees reported progress.

The question of the revision of the Toronto plumbing by-laws was spoken to by a few members, and some exception being taken to the incorporation of the "Durham System" into the new by-laws, on a motion, H. Pepper and H. W. Ralston were appointed a committee to get in touch with the editor of Plumber and Steamfitter to obtain information from the authorities of cities in the United States as to the working of the system. It is understood that in a majority of these cities where a couple of years ago the system found vogue, at the present time sanitary authorities and plumbing experts are opposed to the system, and have had or are having the "Durham System" cut out. So as to be able to take a firm and decided stand on this question when the time comes, the meeting thought it but fit to get as much educative information as possible.

A number of committee meetings are to be held during the next ten days to complete arrangements for the convention. The next association meeting will be held on Thursday, Aug. 25.

Convention Programme.

The programme, as outlined in the last issue of Plumber and Steamfitter, is pretty well adhered to, though some additional details have been included. The convention will be held in Victoria Hall, Queen Street East, on Wednesday, Aug. 31, and Thursday, Sept. 1. Two large assembly rooms, capable of comfortably seating a couple of hundred delegates, have been engaged. One will be used for the business meetings of the convention, and the other as an exhibition hall for the use of supply houses and manufacturers to display their goods.

The first day's programme calls for an executive meeting in the morning, followed by the civic reception to delegates. The real business of the convention will open at the afternoon session, commencing at 2 o'clock. In the evening a moonlight excursion will be tendered the visiting delegates, lasting from about 8.30 until 12 o'clock. The party will go by either the "Turbinia" or "Mojeska" for a sail on Lake Ontario. The boat will be brought off the Exhibition grounds while the fireworks are in progress. An orchestra for dancing will be on board, and a concert programme is being arranged for those who prefer the "quiet life."

On Thursday business sessions will be held, both morning and afternoon, the meetings opening at 10 and 2 o'clock. In the evening the delegates and visitors will form a theatre party, visiting Shea's new vaudeville house. On Friday morning the newly-elected officers will meet to close up business, to lay out the work for the year, and to confer regarding their work during the coming year.

AMEND TORONTO'S PLUMBING BY-LAWS.

Dr. Sheard, Toronto's Medical Health Officer, is gathering information from architects, master plumbers and the plumbers' union, in order to submit to council certain proposed amendments to the present plumbing by-law. "I intend to bring it up-to-date, and several changes will be needed," he said.

The Bell Telephone Co. has applied for a permit to use the Durham system, in the new telephone building, galvanized wrought iron pipes being used. The only example of the Durham system in Toronto so far is the Traders Bank building, and a special permit was given for it by the controllers, in spite of the opposition of the plumbing department. Permission to use the Durham system was refused in the case of the new Standard Bank.

Many master plumbers oppose the "Durham System" as being open to instalation by incompetent workmen, and, therefore, liable to be faulty. Cities in the United States where the "Durham System" has had a vogue are now said to be discountenancing it.

Some men who pride themselves upon their business ability have a ledger that show debts running well past the hundred mark. Is that a sign of business ability?

The man who has gone into the business with the opinion that it is an easy method of making money might better get out of it on the first opportunity before he loses the little cash he has.

A sure sign of weakness, half-hearted methods and a business that is only second rate is the merchant who begins to get busy as soon as a traveler enters. If you don't want anything say so courteously.

PLUMBING AND HEATING MARKETS

MONTREAL

Aug. 13.—There is a good tone to the markets. All lines are going out well, prices are firmly maintained, and the prospect of a strong fall demand all combine to make the conditions cheerful.

The trouble between the bricklayers and the local contractors is gradually dying out, and several large businesses which have been held up are now being worked on. This is good news for those with plumbing contracts. Orders from the country well maintain their strength, and jobbers are pleased with the total bulk moving, while they express a great deal of satisfaction with the business that is maturing for the fall. In fact in many lines of plumbing supplies makers seem to be just about keeping pace with the demand. There has been no opportunity to pile up stocks.

Soil Pipe.—The demand continues as heavy as ever, while there is every prospect of a big call next month. Makers are now working at full pressure to supply present requirements. Prices are unchanged, and we quote light 60 off, heavy 70 and 10.

Lead Pipe.—The recent advance in waste has not interfered with the demand, which shows signs of getting heavier as the fall approaches. Orders are well distributed. We quote: Pipe and waste at 30 off; traps and bends, 50; calking lead, 5c per lb.

Solder. — The market offers little change. They still seem to be buying a little heavier for stocking purposes. We quote half and half 20c, wiping 18½c.

Iron Pipe.—Good movement characterizes iron pipe. The country users show up well besides the city ones. We quote: ¼-in black, 63; galvanized, 48; ⅜-in. black, 59; galvanized, 44; ½-in. black, 69; galvanized, 59; ⅜ to 4-in. black, 71½; galvanized, 61½.

Radiators and Boilers.—The demand continues very heavy, boilers and radiators going into the houses as fast as they can be supplied. The fall demand promises to be unusually heavy. We quote: Steam boilers, 60 and 5; round hot water boilers, 50 and 10; wall and hot water radiators, 50 and 7½; steam radiators, 50 and 7½ and 2½ per cent.

Enamelware.—There is a good demand for all classes of enamelware. The market is firm in tone. Factories are hard at work supplying the present demand. The heavy business expected in the fall will cause a big strain upon the plants.

Scrap Metal.—Buying has improved a little, but there is not much scrap offering. No changes are reported. We quote: Heavy copper wire, 11½c; light copper bottoms, 10c; heavy red brass, 10c; heavy yellow brass, 8c; light brass, 6½c; tea lead, 2½c; heavy lead, 2¾c; scrap zinc, 3c; cast iron, $16.

Metals.—Tin has advanced a point owing to speculative work in the primary markets. Other lines are unchanged. We quote: Tin, 35¼; copper, 13½c; imported lead, $3.75; domestic lead, $3.60.

TORONTO.

August 13.—The situation has changed very little in the past fortnight. Local trade, especially in the sales of enamelware, is now very good, and because of the holiday season the smaller staffs are exceedingly busy.

Plumbing jobs of all kinds—new work, repairs, instalations and roughing-in—are numerous in Toronto, but the large number of master plumbers in the city soon disposes of current contracts.

The heating business is good, and with the advancing season is improving. The general present feeling and the tendency for future business appears bright. The fall is expected to be above the average in results.

Since the close of the G. T. R. strike shipments are moving better and there are not the many complaints about delayed deliveries that existed a month ago. All prices are steady and unchanged.

Enamelware—Particularly in the city demand is brisk. All the supply houses report large numbers of buyers inspecting baths, sinks and closet combinations for instalation in new residences. Outside buying, too, is fair. Quotations are unchanged.

Soil Pipe—Large stocks are in sight. There was a meeting of makers last week, but nothing was done with prices. Demand has been splendid all summer for ordinary sizes, and just now is fairly active. Light pipe is quoted at 60 and 10. Medium and heavy at 70 and 10, and 7 and 8-inch sizes, 50 per cent. Fittings are unchanged at 70 and 10 off. The market is steady.

Iron Pipe and Fittings—Smaller sizes of pipe have the call still. Stocks are more commensurate now than has been the case at this season for several years past. Prices hold unchanged. Discounts on malleable fittings range from 37½ to 40 per cent., with cast iron fittings from 60 to 65 off. Bushings, standard, are 70, and malleable are 65 per cent. Nipples are 75 and 10; headers, 60, and flanged and malleable-lipped unions, 65 per cent. Galvanized pipe is $6.35, and black pipe $4.70 per hundred feet, 1-inch size.

Lead Pipe—Demand, though not great, is steady and satisfactory. Prices remain at 30 per cent. off. Traps and bends are quoted at 50 per cent.; calking lead is unchanged at 4½c per lb., and lead waste is at 9c a lb.

Solder—The range for particular brands still runs from 17c to 18c for wiping, and 18½c to 19c for half and half. Supplies are plentiful and demand fair.

Brass Goods—Manufacturers report orders so plentiful that they have difficulty in getting deliveries out on time, although in many cases compelled to work overtime. The market is firm and demand steadily active. Prices are unchanged. Plumbers' brass goods are greatly wanted just now.

Boilers and Radiators—Discounts continue at 50 and 10 for hot water boilers and radiators, with 2½ more quoted off steam radiators. The feeling is much improved over the spring, when rumors of cutting hindered the placing of orders. Instalations are very much more active at present and are more frequently asked to be rushed. With the advancement of the season the heating business is growing in activity. At present orders are keeping all hands very busy.

TINSHOP TAGS FOR UNIFORM COST.

There are many good features embodied in tags for use in estimating the cost of material and workmanship for the tinshop when there is much trade. These eliminate the danger of under or over-estimating such costs and thus create a means of arriving at an equitable basis for both patron and proprietor. There are many tinshops in which system is an unknown quantity; the workmen simply place a price which they believe to be about right on a piece of work turned out, and that is the end of it.

Sometimes this favors the customer and sometimes the shop owner. These employes think, "Oh, well, it is as broad as it is long, because the boss comes out whole in the end," but this is rather an inconsistent way to regard the methods pursued. If the owner comes out even in the end, some of his patrons are going to be overcharged and others undercharged. While the undercharged ones may be satisfied, a spirit of dissatisfaction is bound to generate in the minds of those who believe they were obliged to pay too much for the work, and, as a result, the owner suffers in the long run through a falling off in business.

The tag should have a place for the name of the owner of the article to be repaired; a blank space for enumerating the nature of the job; blank space for placing the kind and amount of metal used in the work and cost of this material; number of hours work consumed; and incidentals. The tag can then be sent to the office for accurate figuring, and a uniform manner of charging for this class of work can then be installed.

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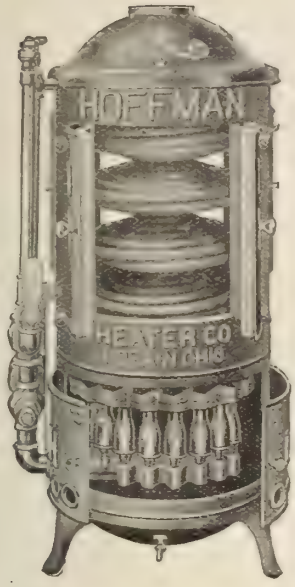

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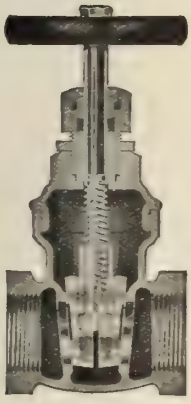

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In service it is unbreakable; a child can provide strength for an inflexible grip and any ordinary tool bag will carry the Vise to jobs away from the shop—weight, 10 pounds.

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Superior Drop-forgings

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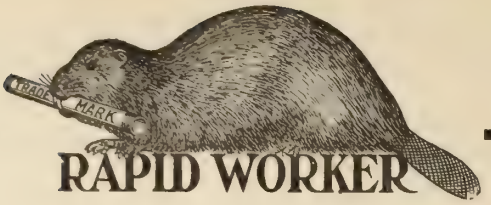

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One man with a Beaver Die Stock is worth two or three men with any other Die Stock made.

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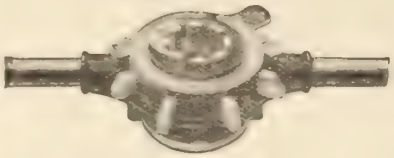
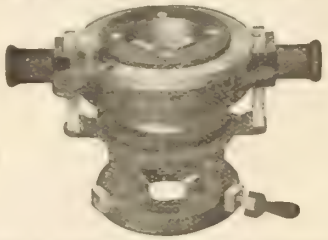
No other Bushings or loose Dies on these two tool and they cut [illegible] and 2 inch pipe.

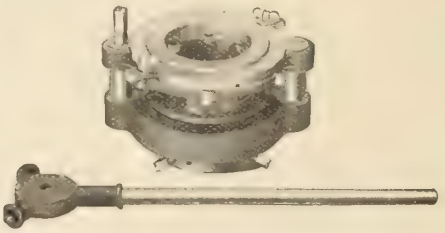


No. 6, threading [illegible] inch, complete

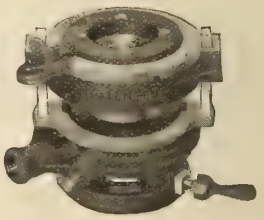
have cut the cost of pipe threading in two because they will thread all sizes thout changing dies. They are built on the receding principle whi ly enables one man to thread any size of pipe and produce absolut nts for all work, including hot water. They save the time formerl anging dies and looking after loose parts and eliminate all of ng when backing off.



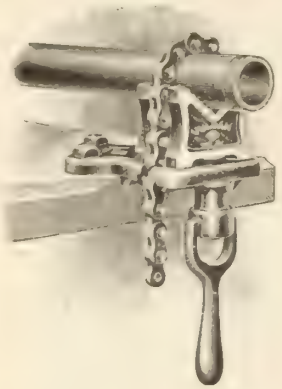
No. 25 A. Threading 1, 1¼, 1½, 2 inch pipe. A boy can operate it



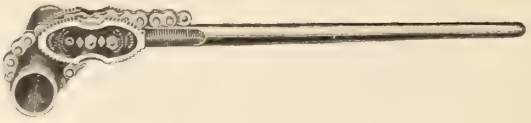
No. 60. Uses two sets of dies. One set cuts 2½, 3, 3½ in.; the other cuts 4, 4½, 5, 6 in.; they are inserted without removing any parts.

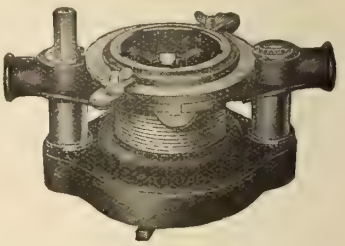


No. 26A. Cuts 1, 1¼, 1½ and 2 in. pipe. A boycan operate this tool.



Pipe Vise. Takes pipe to 4 inch.





No. 41. Cuts 2½, 3, 3½ and 4 inch pipe.

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With Non-receding Dies.

Made in FOUR Different Sizes.

Each size cutting two sizes of pipe without changing dies.

A strong, durable tool, threading two sizes of pipe without changing dies. Particularly recommended for those who want a Die Stock of just the required size and weight for two sizes of pipe.

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No. 121, ½ in.- ¾ in	5.50.	" " " " " Right or Left	1.60
No. 122, [illegible]	6.00.	" " " " " " "	2.00
No. 123, 1½ in.- 2 in	7.00.	" " " " " " "	2.00

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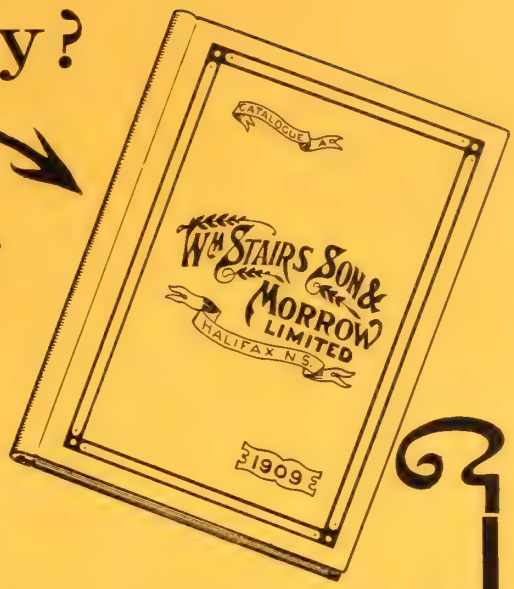

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SCOTIA PLATE A 226

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Plate F
199

The Standard Ideal Company Ltd.

Dimensions Lavatory 18 x 21" Oval Bowl 11" x 14" Back 8"

We have a large number of other styles including many new designs to select from--For which see our catalogue F now ready for distribution.

We are also manufacturers of full lines of Bath Tubs, Shower Baths, Lavatories, Sinks, Laundry Trays, Wash Sinks, Range Closets, and Urinals, etc., etc.

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Vol. IV, No. 6 (New Series). Publication Office : TORONTO, SEPTEMBER 1, 1910. Old Series, Vol. XXII. No. 17

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TRY AN EXPERIMENT—have a good citizen of your town take his neighbors into his basement to show them the **"PEERLESS"** Water System that Smith & Company installed, he'll talk to them about its simple efficiency, its quick service, the cool sparkling water.

Such talk is cheap, Mr. Smith—CHEAP TO YOU. Do you know of any easier way to get business, to compel it to come your way, to improve your reputation?

This is the kind of stuff that helps you

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February 19th, 1910

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21-27 Lombard St., Toronto, Ont.

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So far it works complete in every way. It has been two months or more since we have pumped any air into the tank. There does not seem to be any waste of air. We have a hot water tank attached to our kitchen stove which gives us an ample supply of hot water for kitchen and bath room, so that it makes us wonder how we have lived all these years without such a system.

We feel that we can safely recommend this system to any one and already have called in quite a few of the neighbors, to show them how perfectly it works.

Yours truly,

August Colt.

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NATIONAL EQUIPMENT CO., Limited

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Cast Iron Enamel Ware

Famed for its Smoothness, Colour and Wear

This Cut Illustrates Our

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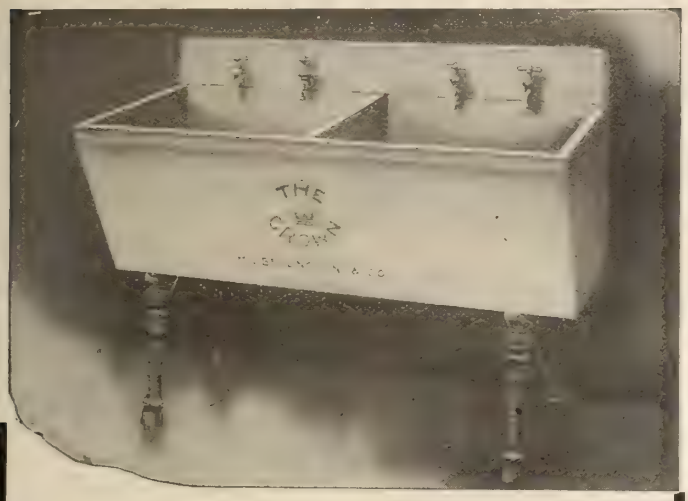
They are uniformly well made of best material and carefully finished.

Drop us a postal for prices and details.



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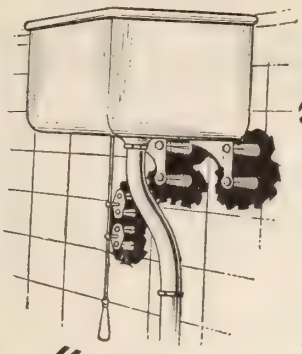

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Ordinary screws won't hold this flush-box. Using wood plugs is unsafe. "Leading-in" is secure, but does not look well. It makes a job that any first-class plumber would be ashamed of.

All the "wise ones" now use

Star Expansion Bolts

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STAR EXPANSION BOLTS are used and endorsed by leading plumbers throughout the Dominion. Specified by prominent architects.

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Catalogue Department 74.

147 Cedar Street - New York City

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WROUGHT PIPE

Black and Galvanized

All sizes. 1-8 to 12 inches, carried in stock

Our pipe is made from the very best quality of soft, weldable Strips, and every length is tested to 500 lbs. per square inch hydraulic pressure.

WHEN ORDERING PIPE SPECIFY "M.R.M."

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The Montreal Rolling Mills Company

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"SOME" Reason For Using

The Honeywell System of Hot Water Heating

The Honeywell System provides a wider range of temperature than possible with any other system, Vacuum, Hot Water or Steam.

From 100°--- 240°

Think what this means to you in

Comfort, Efficiency and Economy

MADE IN CANADA

THE HONEYWELL HEATING SPECIALTY CO.

FRANK T. RAWLEY,
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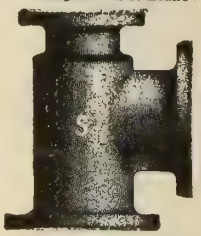
Room 1008, Eastern Township Bank Building,
MONTREAL

PHONE MAIN 4615

Flanged Elbow

Reducing Flanged Tee
Reducing in Run or Branch



REMARKABLE TESTS which speak volumes for the superiority of

STANDARD S BRAND FITTINGS!

At McGill College, Montreal, our 1¼ inch Screwed Elbow, guaranteed for 125 lbs., broke at 5000 pounds pressure, and our 3 inch Flanged Elbow, guaranteed for 125 pounds, could not be broken, the packing blowing out at 2800 pounds pressure.

Think what this enormous strength means in point of safety. We make ***CAST IRON FITTINGS,*** all sizes, for Steam, Gas, Oil or Water. Write for details.

STANDARD FITTING & VALVE CO., Limited - GUELPH, ONTARIO

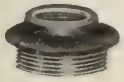
PLUMBERS

This Solder contains 50 lbs. Tin and 50 lbs. Lead to each 100 lbs. It is made of the best material money can buy. In ordering, specify

GUARANTEED SOLDER

The Canada Metal Company, Limited, Toronto

Pipe Fittings



We manufacture and stock a complete line of Malleable and Cast Iron Fittings; also Pipe Nipples.

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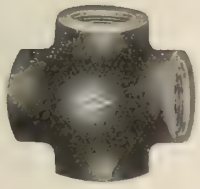

FITTINGS LIMITED
OSHAWA, ONT.

WAREHOUSES:

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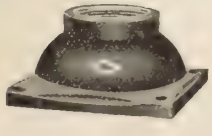
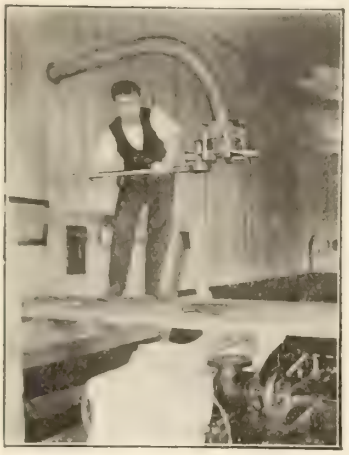


A FEW OF THE MANY USES FOR "TOLEDO and JARDINE" PIPE-THREADING TOOLS

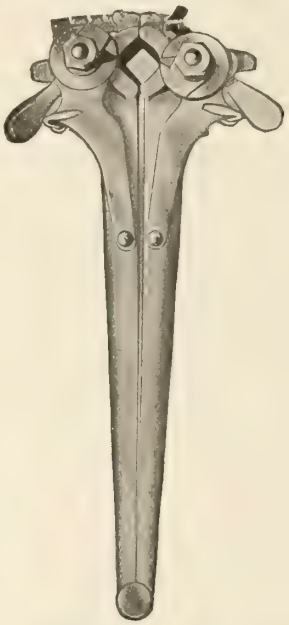
IMAGINE TRYING TO DO THIS WITH ANY OTHER TOOLS



PUTTING a thread on a piece of four-inch bent pipe with a "Toledo and Jardine."

THIS fitter's helper is cutting a four-inch thread in just ten inches of clear space with a "Toledo and Jardine."

THE tool that caught the eye of the delegates to the Master Plumbers' Convention at Toronto, Aug. 31st to Sept. 2nd, 1910.

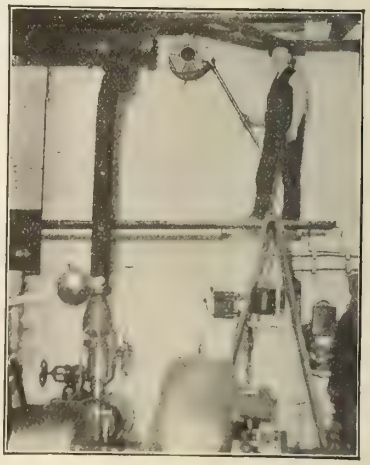


No. 1 "VOSPER" PIPE CUTTER
1-2 in. to 2 in.

THE cutter that CUTS the pipe in every sense of the word. No more burrs, no more reaming, no more split pipe.

FOR SALE BY ALL JOBBERS

USING a "Toledo and Jardine" to thread a six-inch well pipe.

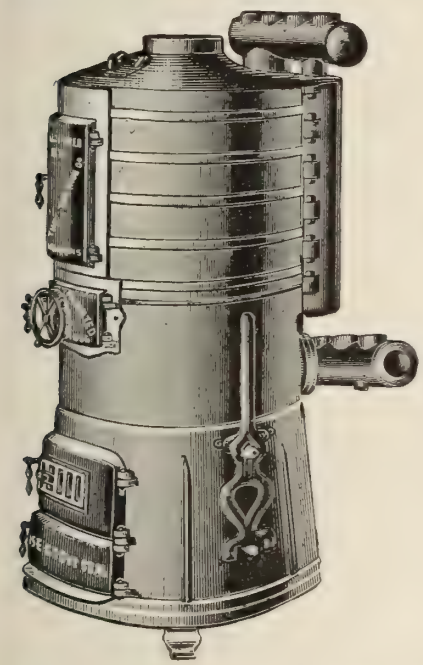


USING a "Toledo and Jardine" to thread a six-inch pipe, projecting only ten inches through brick wall, twelve feet above the floor.

Manufactured by MACDONALD & SONS LIMITED *TORONTO, ONT.*

The Only Boiler Exhibited at the Plumbers' Convention

Held at Toronto on August 31st to September 2nd, 1910

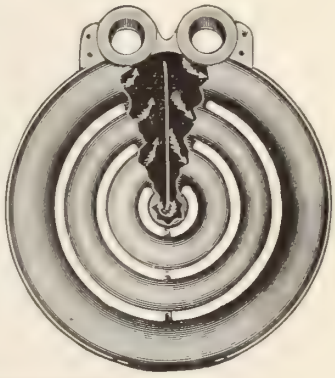


There are several exclusive features in the construction of the

"New Star"
Hot Water Heater

that made a very strong impression upon the delegates, all of whom are practical plumbers and steamfitters.

One of these features is the ***"New Star"*** Hot Water Section.



As will be seen in the accompanying cut, the section is formed of a number of concentric circles connected at a single point. This construction, which is patented, makes the section practically unbreakable, as it enables the metal to withstand contraction and expansion without meeting undue strain.

Since 1896 thousands of these sections have been put up without a single break being recorded.

The circles are made in two patterns, one having a ring of different diameter to the other. When set in place above the fire pot the rings of the first section match the spaces of the next section, so that the heat is compelled to travel from right to left and vice-versa through all the section flues until it reaches the smoke, which it reaches practically free from combustible gases. As a result, the ***"New Star"*** heater heats water quicker than any other. As it is very heavily made, it will give long service with unusually low expenses for repairs.

20,000 "Star" Boilers are in use to-day—a fact that indicates they have come to stay

Write us for Prices and Illustrated Catalogue

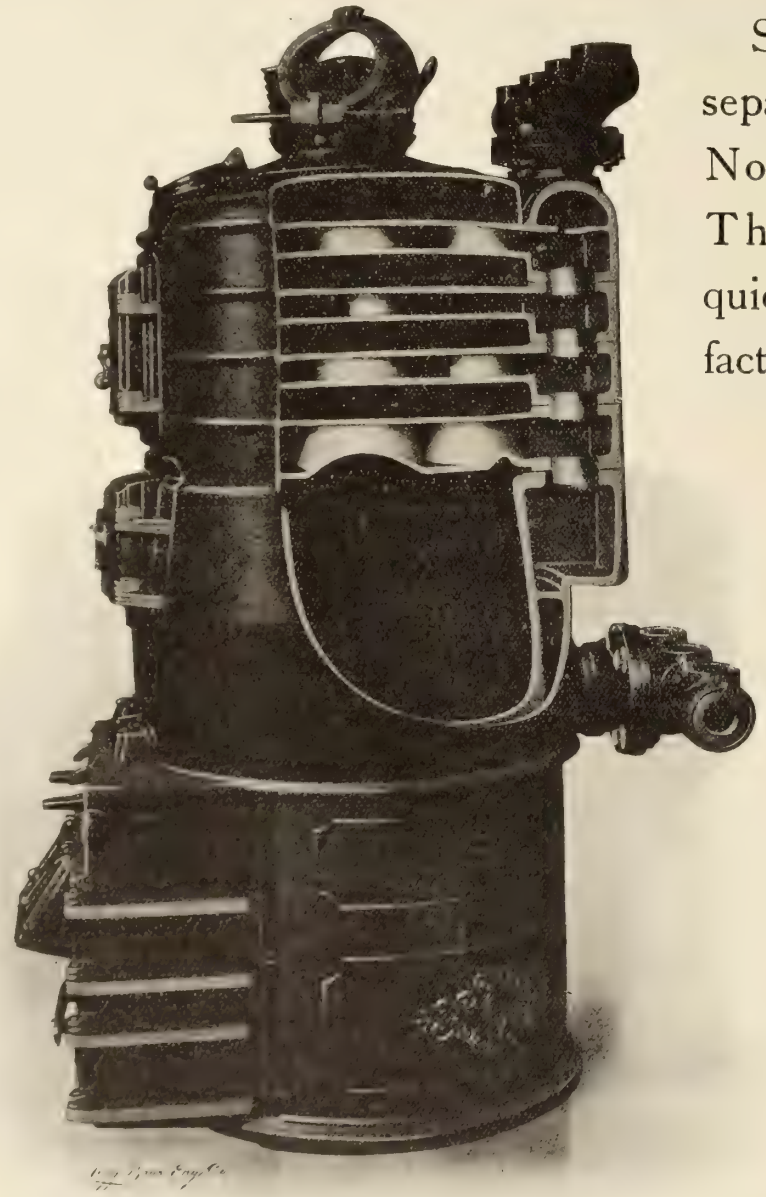
The Star Iron Co., Limited - Montreal

Western Sales Agents: Macdonald & Sons, Limited, 109 Church St., Toronto, Ont.

A Sectional View of the Gurney-Oxford Boiler

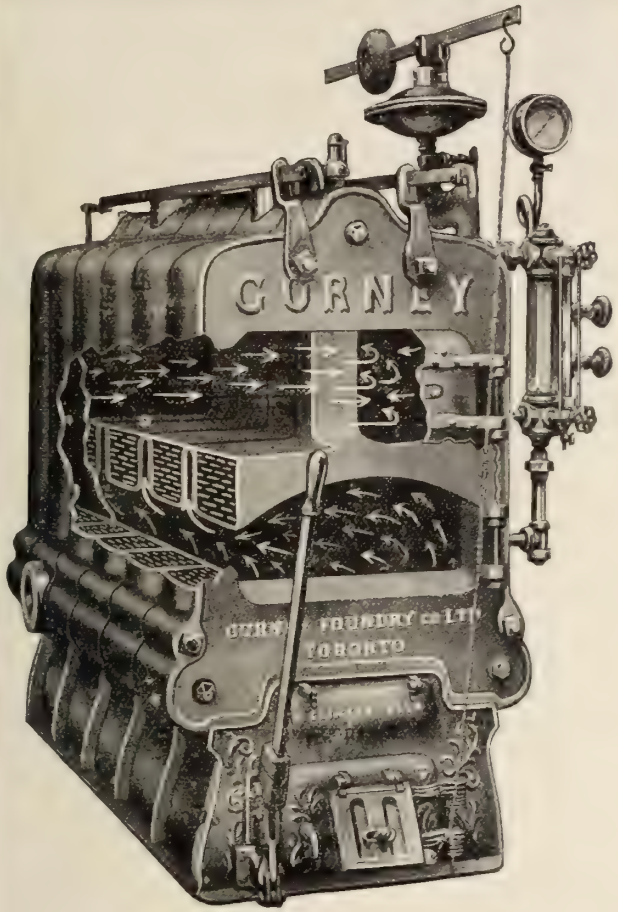
With "Economizer" Fitted on Top.

This sectional cut shows the construction of the sections, and illustrates the value of the bell-shaped flues in first section.



Sections can be shipped separately or together. Note the push nipples. These nipples mean quicker and more satisfactory mounting.

These boilers are carried at all of our branches, and can be shipped in a moment's notice from any of the following cities: Montreal, Toronto, Hamilton, London, Winnipeg, Calgary and Vancouver.



Sectional View 917 Series Boiler

The Smallest Boiler

This boiler is only 49½ inches in height and has proven a boon to fitters located in any town built upon rock and where the cellars are low. It is built in sections, the smallest, No. 913, having three sections. It can be enlarged from time to time without dispensing with parts already in place.

Count 100 feet of radiation per section in steam and 150 feet per section in hot water. Send for literature on this boiler.

RADIATORS

Our stock consists of more than 1000 styles and designs. Supplied with either screw nipples or the non-leaking, all metal, push nipple joint. The radiator can be taken to the different floors of a house in sections and set up with a mallet.

Send for our literature on any of our boilers that may interest you.

The Gurney Foundry Co., Ltd.

TORONTO

Montreal Hamilton Winnipeg Calgary Vancouver London

Gurney-Oxford Quartet Radiator

Plumber and Steamfitter

and Sanitary Engineer of Canada

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Circulating amongst Plumbers, Steam, Hot Water and Gas Fitters, Sanitary Inspectors, Heating and Ventilating Engineers, City Engineers, Boards of Health, Architects, etc.

TORONTO SEPTEMBER 1, 1910

A MOST SUCCESSFUL CONVENTION

This year's convention of the National Master Plumbers' Association was an unqualified success and justifies fully the prediction made by this paper that it would mark the beginning of a new era in association work in Canada.

And the Plumber and Steamfitter is particularly gratified, as with the exception of the circular notice issued by the Ontario vice-president, the notice published in this paper and the articles advocating reorganization were responsible for the attendance of most of the delegates.

Three years ago Master Plumbers' Associations in Toronto in particular, and in all Canada incidentally, received a knock out blow, and the statement was made that it would take a decade at least to bring about a re-organization. The Plumber and Steamfitter, however, has persistently continued to talk organization, not on a price agreement, but on a trade betterment basis, and the result of our work is shown in the increased interest in the National conventions. In 1908 there were only 15 delegates and visitors present, in 1909 the number increased to 30, and this year to over 100.

Not only, too, is the National Association taking on new life, but the Ontario plumbers have taken definite action which should result in a strong provincial organization. Surely there is cause for congratulation.

The National Association is fortunate, too, in its choice of officers. President Cooper well earned the high honor of election to the presidency, and in J. E. Walsh, the next in line, the association has one who would do credit to any position in life. Secretary Legrow is also a man of high moral standing and his election and acceptance of office ensures that the work of the association will be conducted both agressively and satisfactorily during the coming year. Treasurer Higginbotham and the various vice-presidents and chairmen of committees are all well chosen officials, and it is unlikely that any dead wood will have to be culled out of the list at the next convention.

The trade in all parts of Canada should take heart from the success of the convention at Toronto. Under the guidance of the new officers the association is bound to be a credit to the trade and the questions taken up are certain to be beneficial to the health of the community.

PRESENT NAME A MISNOMER.

It is to be regretted that the convention did not sanction the change of name of which notice of motion was given last year. As was pointed out in the convention, times have changed, and the master plumber of to-day does vastly different work from his predecessor of a generation or two ago. Instead of being a worker in lead, as the word "plumber" signifies, he is a man of science, having as much, if not more, to do with the sanitary condition of the community than the medical fraternity. Consequently he should take his place alongside the doctors in the work of the local and provincial boards of health. He is entitled to be known as a Sanitary and Heating Engineer, and he should lay claim to the title rather than allow it to be appropriated by others who trade on his knowledge and experience.

Sentiment may cause some to say that if the name master plumber was good enough for our fathers it ought to be good enough for us, but that is poor logic. The tools and equipment our fathers worked with are not good enough for us. Why then let sentiment rule where reason shows that in the march of evolution a change is necessary.

In leaving the proposed change of name in the hands of the new officers wise action was probably taken. Discussion and time for thought will only add weight to the arguments presented in favor of the change.

A SHORT-SIGHTED POLICY.

The one discordant note heard during the convention was struck by the supply men and manufacturers and their actions appear to have been dictated by a very shortsighted policy.

At previous conventions and social events in the plumbing trade in Ontario, and possibly elsewhere, it has been the practice of "passing the hat" and soliciting donations for a fund to be used for the entertainment of those present. Complaints have frequently been heard about this "hold-up."

The National Association at one time issued an annual report, financed by advertisements of supply houses, but this was discontinued three years ago after the establishment of The Plumber and Steamfitter of Canada.

This year the local committee in charge of the arrangements for the Toronto convention decided to break loose from the old custom and run the convention on a business basis without asking for donations. They preferred to be independent rather than under obligation to the firms they buy their goods from. Consequently they engaged a hall and arranged to decorate it and offered space for sale to supply houses and manufacturers in which to make displays of their goods. A reasonable charge was asked for space, enough to cover expenses and leave a balance to pay for the theatre party and

similar entertainment provided for visiting delegates. To our way of thinking the action of the local committee was highly commendable. But what was the result?

A few manufacturers snapped at the chance to show their goods to the delegates, but the supply association met and the members entered into an agreement to boycott the exhibition by refusing to make displays. And when it was seen that the convention was to be a success and some of the firms in the ring decided to make displays the acting secretary of the combine took drastic action by entering the exhibition hall on the first day of the convention and ordering the offending members to withdraw their displays. The incident became known to the local committee and was reported to the convention and naturally it did not tend to create better feeling between the supply men and master plumbers.

The Plumber and Steamfitter is not concerned as to whether or not the supply men and manufacturers make displays at conventions of master plumbers. That is a matter for each supply house to decide. And as to the statement made in the convention that the supply men also have an agreement not to advertise in this paper, we are somewhat in the dark. But we do know that it is practically impossible for our representatives to get a hearing and talk business with the supply men. For instance, the Toronto and Montreal supply houses were all personally solicited to take space for announcements in this convention number of The Plumber and Steamfitter and not a single one accepted the opportunity.

If it is true that the plumbing supply houses are opposed to a reorganization of the master plumbers of Canada and refuse to do business with and encourage those who are helping in the work of reorganization, they are certainly working on a most shortsighted policy.

If organization is good for supply men and manufacturers, it is also good for master plumbers. And as The Plumber and Steamfitter has pointed out before there will be much less likelihood of loss of accounts by the failure of plumbing firms if there is an association in existence than if the trade is disorganized, as it has been for the past three years.

It is up to the supply houses to become "boosters" instead of "knockers." They can help a whole lot if they will.

THE WINDOW DISPLAY.

Many plumbers complain that trade is not coming their way so well as it should—are they certain that they are doing their utmost to encourage it. What about the window display? It is surprising the indifference that is shown to the window display. There is nothing more effective in the advertising way than a smart looking window, and yet many plumbers ignore the opportunity. The plumbing trade wants advertising as much as any other line of business. Every householder or landlord who passes a plumbing establishment is a probable customer. It is good policy to fix the shop on his mind, so that when a plumber is needed that particular man is at once remembered.

A bright looking shop with an attractive window gives at once the impression not only that the plumber is up-to-date, but that he is a good workman and clean. A man who takes trouble with his store appearance will take trouble with his jobs. Besides the women folk nowadays have much to say regarding the plumbing fixtures and arrangements. Many of them do the buying. They naturally object to guarding their dresses against dirty pieces of pipe, to wait until the red lead and torch are removed from the chairs so that they can sit down, or to inspect a bath tub that is covered with dust and filled with a few odd connections. Women are creatures of impressions. "Don't go to Mr. Smith," they will say, "his shop is so dirty, but try Mr. Brown." Now Mr. Brown may be a much inferior workman to Smith, but he got the business.

It is a very easy matter to fix a window and a store interior so that the place looks inviting, and it is cheap advertising. Even if a plumber has a small window it can be easily decorated with bathroom fittings, while with a window space extending the whole shop front, it takes but little time to give a representation of a bathroom. In fact with a small store front the whole interior including the window can be used in the one display of a bathroom, so that people looking in through the window can be confronted with a bathroom extending the whole length of the store. With illumination at night a very good effect can be produced. Such a window is not expensive. The goods used in the display are not tied up for any length of time. Every article can be taken away at once if necessary so that it is merely another way of keeping stock.

A plumber's business needs street advertising just as much as any other business. His window front is glanced at just as the others in the street. It stands to reason that the more favorable the comment made upon it the better the advertising. He has this advantage that he can make an effective design with very little trouble. We advise every plumber who is making no use of his window except to cause people to draw invidious distinctions, and every plumber who is now accustomed to throwing tools and materials all over the store, to start right away to brighten things up, and note the difference it will make in his trade.

MASTER PLUMBERS BECOME JOURNEYMEN.

Dan Morgan, formerly of Wray & Morgan, and Fred C. Mount, two Toronto master plumbers, who bore reputations as progressive business men, have gone west and are now carrying journeymen's tools at Vancouver.

What better example could be given of the conditions of the plumbing trade as they exist in Toronto to-day?

If any more information is wanted ask the supply houses about the "failure" of the west end plumbing firm last week, where liabilities were about $6,600, about $5,000 more than available assets.

Is an association necessary? In the face of the above can the supply men answer in the negative?

VANCOUVER ASSOCIATION CHANGES OFFICERS

George E. Griffith has resigned as secretary of the Vancouver Master Plumbers' Association, and W. Kinzie, 737 Davie Street, has succeeded him. P. W. Orr, 1228 Granville Street, is president.

Mr. Griffiths is a successful manufacturers' agent and will devote all his energies to that work in future.

The Lackawanna Railroad has adopted the individual paper drinking cup, which Dr. Thomas C. Darlington, New York's Commissioner of Health, has been testing during the past winter, at department headquarters. A small, nickel-plated device adjacent to the water cooler on the Lackawanna Limited has attracted the attention of the passengers and been the subject of comment. Closely nested in a tube are a hundred or more dainty white drinking cups, which, after they are once drawn forth and used, cannot be replaced, but must be discarded or carried away. These cups are exactly the shape of drinking glasses and are stiffened by a coat of paraffin. They are manufactured automatically, therefore, they are untouched by hands until they reach those of the drinker

Canadian Master Plumbers' Fifteenth Convention

Delegates Present From About Forty Towns and Cities—Old-timers Say the Meeting Eclipsed all Previous Gatherings—Fine Corps of Officers Elected—To Meet Next at the "Twin Cities"—Change of Name Referred to New Executive —Both Business and Pleasure Indulged in—Pleasant Social Entertainments—Ontario Convention to be Held on Thanksgiving Day in Toronto.

The fifteenth annual convention of the National Association of Master Plumbers, Steam, Gas and Hot Water Fitters of Canada, held at Toronto, on Wednesday, Thursday and Friday, August 31, September 1 and 2, was the most successful meeting, both in point of attendance and of work completed, of recent years, and reminded one of the splendid annual gatherings of six or seven years ago. The meetings were held in Victoria Hall, Queen Street East, where two large assembly rooms, each capable of comfortably seating a couple of hundred persons, were used. One of these rooms was devoted to the business of the convention meetings, and the other was arranged as an exhibition hall.

The fact that the National Exhibition was in progress proved both an attraction and a counter attraction, but the delegates were determined to accomplish something and stayed at work until they succeeded. The streets, decorated with flags and streamers, gave the city a holiday appearance.

WEDNESDAY MORNING.

Despite a rainy morning there were about 150 delegates and visitors from various parts of the country in the hall when Vice-President Geo. H. Cooper, with the other present and past officers, filed on the platform, at 10.30, to open the proceedings, delegates being present from Montreal to Vancouver.

ROBERT ROSS, Toronto,
The Honored Past President, Who Opened the Convention.

During the preliminaries and before the speaking began, the editor of Plumber and Steamfitter handed out programmes, containing about a dozen songs improvised for the occasion, and "the choir" led in singing the "Plumbers' Stein Song," "Good Old Summer Time," "School Days," etc. When Harry Mahoney took his seat on the platform he was greeted with "Mahoney, That's Me." The crowd caught on and warmed up well, as a result of the diversion.

Vice-President Cooper called the meeting to order and explained that owing to illness in his family, President Joseph Laurier was unable to be present. He called on Secretary H. W. Munday to

read a communication he had received, and the latter read the following letter:

> Gentlemen,—Owing to Mrs. Laurier's illness, I feel very sorry not to be able to attend this meeting. I endorse all the work you may see fit to do, and hope you will excuse my unavoidable absence. Jos. Laurier, President.

"Twins," shouted some wag in the audience, at which there was much handclapping.

"Seeing that our president is not with us to-day," said Vice-President Cooper, "I suppose I must take the chair." He made some complimentary remarks about the members of the association, and welcomed the visiting master plumbers to the convention. He hoped the work taken up at the meetings would be productive of good.

Geo. F. Frankland was appointed tyler, and the convention was begun.

Opening Addresses.

John A. Gordon, past-president, Montreal, said:

"I do not think it is fair that Vice-President Cooper should call on me at a moment's notice to address this meeting. I have never made a speech in my life. I should not like to impose on you at this time by trying to imitate an orator. We all know the great advantage which is derived from this association, both to ourselves and the health of the general public, by the interchange of experiences and troubles which we meet with from day to day, and the way in which we have severally overcome these difficulties.

THE PRESIDENT WAS BUSY.

Why Joe Laurier Didn't Come to the Convention.

"Now, I will not take up your time with any further remarks, but I wish to thank the Toronto local association on behalf of the Montreal delegates present for the very pleasant reception accorded to us, and trust that this convention will be of inestimable benefit to every M. P. who attends the meetings.

Robert Ross, Toronto, that old veteran of the plumbing fraternity, and one twice president of the National Association in its heyday, was glad to be present, and hoped the association would get back to the place it occupied in the old days. He hoped they would be able to get the supply men in line. In Toronto it was proposed to adopt the "Durham" system of plumbing and incorporate it in its revised plumbing by-laws. The convention should discuss this question. There was none of this galvanized pipe talk in his day. They should start an agitation for the abolition of the "Durham" system. "It is unsanitary, and we should fight against it. We are not going to give up our whole business without an effort on our part. When you knock the 'Durham' system on the head you will do the trade a benefit, the country a benefit, and the public a benefit."

Civic Welcome.

At this stage Mayor Geary and Ald. McGuire, chairman of the civic reception committee, entered the hall and were given an ovation. The mayor, in welcoming the visiting master plumbers to Toronto, said that while he would not discuss any of the items that would come before the convention, he wanted to say that he had "nothing but the greatest satisfaction to express for the way in which your men do their work here in Toronto. Your association, I see, is national in character. Your officers come from the various cities spread over the Dominion from the Atlantic to the Pacific. We look to the man from Nova Scotia and to the man from British Columbia, and grasp their hands, knowing we live under the same sovereign and have the same love of country. We are glad to have you here and we trust you may enjoy yourselves while in Toronto for your convention. I present you with the freedom of the city—whatever that may mean or embrace—I don't know." (Cheers.)

OPENING THE CONVENTION.

The Choir Opened the Meeting With a Song.

A BIG CONVENTION.

The group photograph shown on the opposite page taken by Plumber and Steamfitter's staff photographer, is practical evidence of the success of this year's convention, it being taken at 2 p.m. on Wednesday before a large number of the delegates had arrived in the city.

The Plumber and Steamfitter is particularly gratified at the success of the gathering, as, without detracting a particle from the splendid work done by the active Toronto committee, who had the arrangements for the convention in charge, it can be given full credit for the large attendance. The convention fully recognized this, and by resolution thanked the paper and its staff for their assistance.

The Plumber and Steamfitter will do all in its power to further the work of the efficient officers elected. It is receiving splendid support from a subscription standpoint. Few Canadian plumbing shops can now be found without the paper. It needs articles and letters on trade subjects, however, and friends who appreciate the paper's work will assist us by sending communications, as well as by buying from firms who support the paper which is working in the interests of Canadian master plumbers.

Ald. McGuire: "You fixed the mayor; you will have no more troubles at the city hall. (Laughter.) Before coming here this morning, His Worship asked me to act as his bodyguard; but, judging from the reception extended, I will have an easy task. On you great responsibility for the public health depends. When we have good plumbing we have good water—and that is an important matter in Toronto just now. I trust that your deliberations will be successful and productive of good for the public health, and that you will come to Toronto again." (Cheers.)

Reply to Civic Representatives.

Fred Armstrong was chosen by the chair to respond to the civic welcome, He was received with "See Him Smiling," sung by all present. "It gives me pleasure to accept the mayor's freedom of the city," he said. "It was well he had done so. I have attended plumbers' meetings in the past and know how necessary that freedom is. (Laughter.) The freedom of the city means that if you get into trouble ring up the mayor and he will get you out." He thought Toronto the best city in the world, and believed its civic government amongst the best on the continent. Its officials and inspectors, too, were fair and competent men. He had heard no applause at this, but, nevertheless, it was true.

Growing reminiscent of old plumbing days, Mr. Armstrong said in those times one could walk along King, Queen and Yonge Streets and see splendid and handsome plumbing showrooms and offices. "The work of to-day has not deteriorated from the earlier times, but more competition has made it necessary to get out and hustle for business, because of the number now in the trade." On behalf of the association, he thanked the mayor for granting the freedom of the city, and Ald. McGuire for his welcome. He thought that for the work of again building up the association great credit was due George Cooper and the other efficient officers.

Merchants Extend Welcome.

R. W. Dockeray, president of the Toronto Retail Merchants' Association, welcomed the convention on behalf of his body, and promised the Master Plumbers' Association the assistance of his organization in any matters pertaining to their welfare which came before the civic, Provincial or Dominion Governments.

G. E. Gibbard, secretary of the Toronto Retail Merchants' Association, commisserated the plumbers on their troubles. He sympathized with them. He knew they lived under the curse of municipal by-laws that were not all that could be wished. He closed with a piece of advice: "Your best friend is your next door neighbor plumber. Get together with that neighbor and discuss the obstacles you have to overcome and you will get better results from this getting-together, this association work, than from eternal bickerings and petty strifes."

Welcome From Manufacturers.

On behalf of the manufacturers and supply men, L. L. Anthes, of Anthes Foundry, Limited, wished to add a word of welcome. "Our customers are among the plumbing trade, and we have and should have a friendly feeling toward them. In the old association days there was a feeling of security among them. The manufacturers and supply men felt sure of their accounts being paid. He hoped the present movement would bring the association back to its old place, and would be productive of much good to themselves."

Credentials Committee.

Chairman Cooper named Jno. A. Gordon, Montreal; F. Maxwell, Toronto, and W. B. Sime, Port Arthur, a committee on credentials, with notice to report at the afternoon session.

WEDNESDAY AFTERNOON.

The first business was the receiving of the report of the credential committee, and on motion of John Watson and E. D. Higginbotham, the names registered were accepted as constituting the convention, together with additional names to be enrolled during the meeting.

Delegates Register.

The following delegates registered during the convention:

Vancouver—C. Weeks.

Calgary—E. J. Young and J. Marr.

Montreal—J. Watson, J. E. Walsh, J. A. Gordon, H. W. Munday, Walter Ryan and L. Conroy.

Toronto—G. H. Cooper, R. J. Shannon, L. Legrow, H. Hicks, F. Maxwell, D. Glynn and G. F. Frankland.

Hamilton—W. J. Clark, of Adam Clark & Sons; Frank Chapman, William and Fred Gooderham, of Gooderham Bros.

Brantford—Chas. Taylor.

Paris—J. Cunningham.

London—J. Eggett and L. J. O'Dell.

St. Thomas—C. E. Bull and E. D. Dickson.

Chatham—R. McG. Coyle.

Stratford—H. J. Peters and A. E. Silvester.

Goderich—W. R. Pinder.

Galt—T. Lockhart.

Inglewood—A. Spratt.

Collingwood—J. A. Caslake.

Niagara Falls—F. F. Heximer.

Ridgeway—B. F. Zavitz.

Burlington—J. T. Mathews.

Peterboro—R. J. G. Sutherland and R. G. Sturgeon.

Trenton—Jas. Fitzpatrick.

Belleville—W. B. Geary.

Brockville—Geo. Rose.

Aurora—Stanley Richards.

Port Hope—T. W. Millward.

Barrie—J. J. Neelands.

Orillia—H. J. Andrews.

Bracebridge—A. S. Bates.

North Bay—J. E. Farrell, S. J. Cherry and A. E. Lasalle.

New Liskeard—J. Murphy.

Haileybury—F. R. Gibson.

Sudbury—D. S. Humphrey.

Port Arthur—W. B. Sime.

Fort William—E. D. Higginbotham.

Guelph—H. Mahoney, A. Malcolm, H. E. Bates, and G. E. B. Grinyer.

Ottawa—H. A. Knox, F. G. Johnston, H. Chandler, J. T. Bond and J. Thorp Blythe.

Visitors Registered.

Amongst the visitors at the convention were the following:

Calgary—Mrs. E. J. Young.

Montreal—Mrs. J. A. Gordon, Miss Gordon, Mrs. J. C. Walsh and Mrs. H. W. Munday.

Goderich—Mrs. Pinder.

Toronto—Miss E. Lettie, Robt. Ross, Fred Armstrong, Alex. Purdy, Wm. Mansell, George Clapperton, (Bennett & Wright), H. Hogarth, Gordon Ritchie, H. Peppar, J. R. Seager, J. H. Warwick, J. C. McMinn, G. W. Richardson, F. Jamieson, R. W. Snyder, R. Sherlock, J. Sherlock, J. E. North, W. H. Daw, Frank Atkins, R. Stevenson, Fred J. Smith, W. J. Clark and F. G. Cowan.

The Plumber and Steamfitter of Canada was represented by Weston Wrigley and James O'Hagan, Toronto, and the Plumbers' Trade Journal was represented by C. J. Brogan, New York.

Committees Chosen.

The following committees were then appointed by the chairman:

Credentials—J. A. Gordon, Montreal; F. Maxwell, Toronto, and W. B. Sime, Port Arthur.

Resolutions—E. J. Young, Calgary; C. Taylor, Brantford, and Jas. Fitzpatrick, Trenton.

Press—L. Legrow, Toronto; W. J. Clark, Hamilton, and E. D. Higginbotham, Fort William.

Select—J. E. Walsh, Montreal; A. Malcolm, Guelph, and E. D. Higginbotham, Fort William.

Audit—Geo. Ross, Brockville; R. J. G. Sutherland, Peterboro, and A. E. Silvester, Stratford.

Nominating—Wm. Mansell, Toronto; J. E. Farrell, North Bay, and F. G. Johnston, Ottawa.

Following this preliminary business the various officers' reports were read, as follows:

President's Report.

In looking at the progress that all trades and commerce have made in the

past twelve months and the good prospects for the year to come, it becomes our duty to take every means in our power so that the National Association of Master Plumbers of Canada will take a leading part in the progress to come; and in order to succeed, the time has

JOSEPH LAURIER, Montreal,
Last Year's Presiding Officer.

come where the permanent salaried secretary is required, one who will promote local associations in new districts, and help to strengthen the present local associations, such secretary to devote his entire time to advance the welfare of our National Association throughout the Dominion until our local associations could have a salaried officer of their own. The efforts, both collectively and individually, would, I am sure, meet with success and be of much benefit to all. I trust that the suggestion will meet with favorable consideration and discussion at this convention.

A company, known as the Canadian Domestic Engineering Co., Limited, Montreal, are doing designing, supervising of heating, ventilating, electricity, plumbing, steam and electric power plants, vacuum cleaning, kitchen and laundry equipments, mill and factory engineering. This state of affairs makes one think that our welfare is in danger, and we certainly need some one to look after our interests along this line.

I take this opportunity to thank you for the honor you bestowed on me last year when you elected me to the high position of president of the National Association of Master Plumbers of the Dominion. You can rest assured I will always do my utmost to advance the cause of our association.

JOSEPH LAURIER,
President.

Vice-President's Report.

In presenting my report for the past year for your consideration as your vice-president, I regret to say that very little progress has been made throughout the Dominion of Canada, but, nevertheless, locally speaking, we have made a decided progress in our own city. And as Toronto is known far and wide for the good things that originate within her borders, we have much to be thankful for.

As you are aware, there was no association or branch here in our city, but since our last meeting in the City of Montreal, I have put considerable time in forming a local branch, with a membership of about 150.

Being unable to form an association and become a part of the National Association of Master Plumbers, we have

GEORGE H. COOPER, Toronto,
Elected President for 1910-11.

affiliated with the Retail Merchants' Association of Canada, and have made material progress in our work since becoming a branch of them.

For your information, permit me to say, that, since our inauguration meeting, held in November of last year, with a membership of 16, and with a present membership of 120, you will readily agree with me, when I say that in less than a year we have grown into a strong, live association, which we are proud of, and which we earnestly believe will materially help us in our work. We expect to be able to say in our next report to the association in 1911 that every plumber in Toronto is in our ranks.

I desire to thank you very kindly for the honor which you conferred upon me in making me your vice-president for the past year, and in vacating the chair I wish the incoming officers and the members greater success in their work as an association.

GEORGE H. COOPER,
Vice-President.

Secretary's Report.

It is with much pleasure I submit my report as secretary. As I stated in my last report, I felt the crisis had passed and that the association was on the upward turn. My word has come true.

It gives me the greatest satisfaction to see that Ontario is in line again, and that all the other provinces are recognizing the fact that they need an association.

I have not been as busy as I would have liked to be, but it has not been my fault. I have written quite a few letters, many of them registered, without receiving an answer. Gentlemen, I do not want to complain, but you know it is not right. I find by reading the trade papers that some have time to write quite a long article to them, but forget to send me even a line. I am not jealous of the papers, as I consider that our Canadian trade paper was a God-send to all plumbers in the Dominion, and I would suggest to all that in subscribing to The Plumber and Steamfitter that it is money well spent. But there is one point not to forget, which a great many do. (Read it).

In a letter printed by the courtesy

H. W. MUNDAY, Montreal,
Vice-President for Quebec for Coming Year.

of The Plumber and Steamfitter, Oct. 1, 1909, pasted on this report, I asked for a letter from every firm in Canada who would be favorable to reorganization of the trade. I got none.

I received a letter stating Mr. Beattie, of Winnipeg, never received a notice of

his appointment as vice-president for Manitoba. There may have been some mistake, but I assure you, gentlemen, that every one who was appointed was notified. Mistakes happen sometimes, and I would suggest to my successor that every letter he sends out be duly registered and avoid mistakes.

In closing, I wish to thank The Plumber and Steamfitter for the great assistance given me this year, and sincerely hope they will continue in their good work.

H. W. MUNDAY,
Secretary.

Quebec Vice-President's Report.

Association work in the Province of Quebec shows probably a slight improvement for the year 1910 over 1909. In our present unsettled state, however, it is almost impossible to broaden the sphere of our work, as really to-day we have no special inducements to offer. Your provincial vice-president, in consequence, has limited his field to Montreal solely. As yet, he regrets to state that the members, generally speaking, have not ceased the thankless and fruitless struggle of price-cutting. Competition is assuredly the life of trade, but by competition is undoubtedly meant honorable rivalry and above-board and financially productive business methods. It might be too much to expect that saner business will readily be introduced by all, but it is not improbable that the mapority will soon awaken to the truth of the folly of securing work at any price. With [illegible] hope it will not be retarded—our association will surely have special advantages to offer, which, added to the magnetism of both fraternal and business ties, should happily spell success for the future.

J. E. WALSH, Montreal,
Vice-President of the National Association for Coming Year.

It may be of interest to you to learn that the Montreal branch of your National Association is carefully considering, among others, the following subjects:

1. The elimination of the general contractor, so far as the technical plumbing and heating trades are concerned.
2. The revision of the official selling price list for jobbing work.
3. Amalgamation with the Builders' Exchange.
4. A study of existing conditions in order to ascertain the most efficient manner of conducting a plumbing business, special attention being given to the exact cost of running expenses, and to the proper percentage to be added to insure a definite and tangible profit.

A Practical Suggestion.

It might prove a wise plan if at every future Convention a few hours were allotted to the discussion of the best means to be adopted by the different locals to arouse enthusiasm among its members. An exchange of ideas with due allowance for local conditions should tend to the advancement of the main body through its branches. Our National Association is diametrically opposed to most business concerns inasmuch as it practically owes both its existence and maintenance to its branches. Is it not therefore our bounden duty to give our best thoughts to the parts which constitute the whole? Let the officers and delegates at the ensuing Conventions come prepared to answer at least one of the following questions:

Is your Association in the rut and if so for what reasons?

Did your association succeed before and if so, by what means?

How can your association if in the rut, be placed on a substantial footing?

Devote all your energy to the locals. Build up the locals and the main body is built. In the building up of the locals, due discretion, however, must be observed. For what does it avail to establish smaller sub-locals in provinces where the principal city local is dead? How long will they survive? Make the principal local, I mean the local of the largest city, a success, so that the sub-locals of smaller cities and towns can readily be established or if already established be simply prepared to continue in line eager to grasp the advantages offered them. Far, however, from advocating the destruction of the sub-locals, let us expand not in a slipshod manner but slowly and surely. Begin with the foundation, but make the foundation solid before adding to it.

Before concluding, I should like to especially thank the Plumber & Steamfitter for the valuable aid it has rendered the master plumbers in general and this Association in particular. A neat, newsy and bright periodical, by its persistent efforts it has achieved a reputation probably far beyond the first expeditions of its publishers. Read from coast to coast, it is without doubt the best medium to reach the Canadian Master Plumbers.

J. E. WALSH,
Provincial Vice-President.

Ontario Vice-President's Report.

Having been elected at our last Convention in Montreal, 1909, I have endeavored to further our interest in Ontario during the last year. I have sent out different letters during my term of office endeavoring to get the master plumbers in Ontario to attend this Convention and try and band ourselves in a body as we were in the past. In the attendance at this meeting to-day you can see the fruits of my labors. I can assure you it pleases me greatly to see how our Ontario Master Plumbers have responded to my call, about 30 Ontario towns have delegates present.

R. J. SHANNON, Toronto,
Who Earned Re-election as Ontario's Vice-President.

I trust at this meeting something will be done towards securing the enactment of a provincial law governing the various municipalities where by-laws do not already exist. Hamilton, I have heard, has just adopted a by-law and London has taken the necessary steps to secure the same. Splendid progress has been made during the past year and we are in better shape than ever to do even better work during the coming year.

R. J. SHANNON,
Provincial Vice-President.

Alberta Vice-President's Report.

As your Vice-President for the Provinces of Alberta and Saskatchewan, I beg to submit the following report of the standing of the Plumbing and Heating trade throughout these provinces.

Caught at the Calgary and Edmonton Plumbers' Picnic.
E. J. Young and Mrs. Young, Calgary; Mrs. Lee, daughter, and Andy Lee, Edmonton.

The past year or two has seen a great advance in the plumbing and heating business of the West, and I am glad to be able to say that the advance has been in the right direction, and promises to bear great fruit in the near future.

In my own home city of Calgary, a movement was started in November of 1908 towards the organization of a Master Plumbers and Steamfitters' Association, and starting with a membership of nine has steadily increased until all the firms engaged in the plumbing and heating business in the city were enrolled, giving us a total membership of twenty firms. I consider this to be a proud record and is a great object lesson on the benefits to be secured from proper organization.

We are making application for affiliation with the National Association, and feel that this will assist greatly in the work of our local body, by the interchange of ideas, etc., that will necessarily come to pass. The agreement with the local union, dating from July 1, 1908, expired on June 30, 1909, and a strike was declared by the journeymen. This was handled, not as heretofore, individually; but by the Association as a body, with the result that the strike did not last any length of time, but was settled very quickly in a manner that was satisfactory to both sides concerned. We have found and find, that matters of this kind can be handled in a much more expeditious and satisfactory manner when there is an Association of the masters, than it can be by individual firms. We also find that the Association as a body can bring matters pertaining to our business to a much better conclusion, when such matters are up for discussion in the City Council, than we could by each firm speaking for itself.

Calgary's License System.

I also beg to state that we are now compelling every applicant to the city for a Master Plumber's license, to pass both a theoretical and a practical examination before being eligible to receive this license.

We also do the same thing in regard to the journeymen, and have found that this examination tends very strongly to a much better class of plumbing work, and the elimination of the slip-shod manner of installing sanitary appliances. The examining board is composed of three members, the plumbing inspector, a master plumber chosen by the Association, and a journeyman plumber chosen by the local union.

The license fee for a master has been raised from $5 to $20 and for a journeyman the license fee is $5.

The Calgary Association has been very successful since its inception, and at the expiration of our first official year, which was on Jan. 10, 1910, we gave a banquet to the members, and had the pleasure of entertaining the Mayor and Commissioners, the officers of the Board of Trade, the Press and representatives of the different supply houses, adding to these the officers of the local union. This banquet was a great success and has served to bring the aims and objects of the Association before the City Fathers and the business men of the city in a very convincing manner. The speeches made by the guests assembled, showed that they had been thoroughly awakened to the extreme importance of the sanitary branch of the building trades, and realized as never before how much depends on the plumber in keeping the health of the community at a high level. This little social gathering has also served to make a more sociable feeling between the masters and the

The Men Who Look After Edmonton's Sanitation.
Group of Edmonton Master Plumbers, Photographed by E. J. Young, Calgary, While Picnicking.

[illegible] and taken altogether may be said to have fulfilled its purpose completely.

Two Cities Co-operate.

I am pleased to be able to state that our Sister City in the north, Edmonton, has also formed an Association, on lines similar to the Calgary one, and it is meeting with very gratifying measure of success. I regret that at the last minute they were unable to send a delegate to this convention, as we would no doubt all be very glad to hear some words from them in regard to the work in Edmonton. However, they are very enthusiastic and on August 12, the Calgary Association went up in a body to visit them for a day and a very enjoyable time was spent, our Edmonton friends surpassing themselves in their entertaining of their guests. A small meeting of the two associations was held in the evening and ideas were exchanged, and the bands of brotherhood in the plumbing trade were drawn tighter than ever between the two cities.

I would like to call attention to the fact that in the opinion of the Alberta plumbers as a whole, association work is the logical solution of all the difficulties that beset the path of the plumber, and we are endeavoring to not only have a local association in each city, but when all are in line, to have a Provincial Association. In furtherance of this, we are using all our efforts to have local associations formed in each centre of business, and we have great hopes of success, our last report from Lethbridge being to the effect that they are seriously considering organizing there. If this is done, it will mean that Alberta will practically be completely organized, and by the next National convention, I hope that my report will be of the Provincial work done as well as the Municipal.

An Organizer Needed.

I might take this opportunity of bringing before the members here assembled an idea that has taken hold of me, and that is the matter of having an organizer from the National Associations, and take a trip through the Dominion, organizing local associations, and if successful in that, provincial ones. This will help greatly and the advice of a practical man will overcome to a great extent the hardest part of association work, the getting started and overcoming of the thousand and one little obstacles that will crop up in the path. The time is now ripe in the West for a move of this kind, and as all the work is new it will mean the upbuilding of a first class civilization from a sanitary point of view, to say nothing of the personal benefits that will accrue to the master plumber.

In regard to Saskatchewan, I might say that my report is practically nil. Alberta, and particularly Calgary, being of such magnitude and importance, that I found it impossible to devote very much time to studying conditions in our Sister Province. Acting on this, I would respectfully suggest that the National Association appoint a vice-president for Saskatchewan alone, as this province is growing by leaps and bounds, and it is impossible for the Association business to be handled by an outsider. Saskatchewan has several large centres of population where the plumbing business is rushing, and an officer that is on the scene will be able to look after things as they should be looked after. Regina, Moose Jaw, Saskatoon, Prince Albert, and other points are growing daily, and if the association would appoint some well-known master plumber in any one of them, great good might be done, and organization be perfected all over the province. In conclusion, I might say that taking all in all, the plumbing and heating business in Alberta is in a very promising and flourishing condition, particularly in Calgary and Edmonton, where the results of association work are visible on every hand, and bears testimony to the value of thoroughly and well conducted organization.

E. J. YOUNG,
Provincial Vice-President.

BOAT RIDE AT EDMONTON.

How Edmonton Plumbers Entertained Their Calgary Brethren.

Plumbers' Wives and Sweethearts Out for Fun.

The Ladies and Children at the Recent Picnic of Calgary and Edmonton Plumbers.

Special Committee Report.

Your committee appointed to secure legislation incorporating this association into the Canadian Society of Sanitary & Heating Engineers, begs to report they have met at different times, the matter being referred to the chairman of the committee on legislation. H. A. Knox, who is in Ottawa, has more opportunity to meet the Secretary of State who deals with these matters, having had no satisfactory reply.

I secured legal advice and I would recommend that an amount be appropriated of from one to two hundred dollars for preliminary expenses.

JOSEPH LAURIER.

Sanitary Committee's Report.

Your sanitary committee regret that they cannot in their report lay claim to having accomplished anything of importance during the past year; it is very difficult for your commitee to do anything unless they are given something to work out by the different locals.

We look upon each local association as a sanitary committee of the district to which they belong, and when any dif-

ficulty arises in their quarters they should seek the assistance of the sanitary committee of the National Association. In this way the National Association would be kept posted as to what was going on and would be in a position to advise or assist the different locals

JAMES GRIFFIN, Montreal,
Chairman of Apprenticeship Committee.

when they had anything to do in connection with the framing or amending of the sanitary by-laws, and we hope the delegates at the convention will give this their serious consideration.

We should have federal sanitary by-laws and inspectors, to see that they are properly enforced; it is very difficult to properly master an epidemic in a large city when the outskirts of the same city have no sanitary by-laws, or if they have, are not enforced. This is where the provincial authorities should insist on the sanitary by-laws being enforced.

Last year your sanitary committee advised the forming of another association from amongst the members of the Master Plumbers' Association, to be known as the Association of Sanitary Engineers. This was improved on at the last convention by calling it the Canadian Society of Sanitary and Heating Engineers. It has been stated in some of the trade papers that we intended to change the name of the Master Plumbers, but this is not so. What we decided on was to form another association from our members, and that the new society would do the work that is now being done by the Master Plumbers. This new society is like a son that is carrying on the business of his father under the father's guidance. The reason for advising the formation of this new society is that very nearly everything that the Master Plumbers' Association undertake to do is looked upon with suspicion, no matter how much it is in the public interest, and we believe that the same thing, recommended by the same men, under a new name, will have the approval and support of the public.

I very much regret not being present at your convention this year, but, if spared, I sincerely hope to be with you next year.

P. C. OGILVIE.
Chairman Sanitary Committee.

Apprenticeship Committee's Report.

I regret to state that I have not accomplished a great deal, as chairman of apprentice committee, but that it has not been for want of trying. I have interviewed the Council of Arts and Manufacturers several times, Mr. Gauthier, president, on the subject of having our trade school under the control of the local body of master plumbers. He has promised he would take it up with the board of directors, and I look forward the coming winter to having things in a more favorable condition for the local body of master plumbers.

Last winter we had an average of 88 apprentices in attendance at Montreal, and at Three Rivers an average of 33. The exhibition which was held in Monument National was very favorable. There were two prizes—1st prize, a kit of tools, donated by Master Plumbers' Association of Montreal; 2nd prize, silver medal, donated by James Griffen. 1st prizeman, Gorman; 2nd prizeman, Robertson.

I would respectfully suggest that the Montreal and Three Rivers master plumbers should insist on all their apprentices attending these schools, as in years to come it would be a great benefit to the trade.

I am sorry I will be unable to be present with you this year, owing to pressure of business, but wish you all a hale and hearty time.

JAMES GRIFFIN,
Chairman Apprenticeship Committee.

Select Committee's Report.

Your select committee beg to report that we carefully read all correspondence between Secretary Munday and the other officials and members of this association. We find that he did his work as successfully a possible, but received very poor support. It is certainly very discouraging to a secretary to receive but a dozen answers to some hundred letters. What we should like to recommend strongly is that all members should constantly bear in mind that plain common civility demands a reply to a communication. In view of the neglect of the past, we are of an unanimous opinion that every official letter of this organization should be registered.

In regard to complaints, we find that no charges should be accepted or taken up unless sound proof in writing is provided.

E. D. HIGGINBOTHAM,
A. MALCOLM,
J. E. WALSH,
Committee.

On motion of Messrs. Watson and Gordon, the various reports were referred to the resolutions committee for consideration.

THURSDAY MORNING.

Thursday morning's session was a short one. The meeting convened at 11 o'clock and adjourned for lunch at 12. Chairman Cooper said the reports of the various officers presented on Wednesday afternoon were very encouraging and satisfactory.

Secretary Munday read the minutes of the preceding day's business, which were confirmed.

The Legislative Committee's report was presented by H. A. Knox, Ottawa, chairman of that committee. Its reading was received with applause.

Legislative Committee's Report

The resolution adopted at the Convention in Montreal last year, instructing your Legislative Committee to consider the question of incorporating this association under the title of The Association of Sanitary and Heating Engineers of the Dominion, has been followed up by this committee and the results obtained duly laid before you.

H. A. KNOX, Ottawa,
Again Elected Chairman of the Legislative Committee.

Incorporation by law means that you are recognized as an unselfish public spirited body of men, proud of your occupation and anxious to promote the common weal by its action.

While your honors are increased immensely with it, at the same time, your responsibilities are increased with it, your authority will be recognized, but you must conscientiously strive to maintain it by following faithfully the lines laid down by incorporation. Public applause will be yours by constitutional acts; no less certainly will disgrace be yours by unconstitutional acts.

Incorporation is a progressive measure and one that will confer a lasting benefit to all concerned. Before acting decisively though, this committee would urge every delegate to study the matter fully, in order to have a sound appreciation of the dignities carried by incorporation.

H. A. KNOX.
F. G. JOHNSON.
THORPE BLYTH.
JAS. CURRIE.
H. CHANDLER.
Legislative Committee.

The report was also referred to Resolutions Committee on motion of Messrs. Walsh and Sime.

THURSDAY AFTERNOON.

The Committee on Resolutions presented their report, as follows:

Resolutions Committee Report.

Re permanent secretary. We recommend new executive to take into consideration the appointment of a permanent paid secretary and an appropriation for legislation.

We regret the annoyance caused secretary by members being too busy or negligent to answer his correspondence.

The suggestions in Quebec Vice-President's report be taken up by new executive. The suggestions we consider are of vital importance to the trade and should be acted upon as early as possible.

The Ontario Vice-President's suggestion re Provincial Sanitary Law is a good one. In addition we would like to see each plumbing inspector pass an examination before an examining board before being permitted to pass on plumbing work.

We are pleased to note the progress made in Alberta and particularly commend the example set by Calgary during the past year in establishing regulation requiring both master plumbers and journeymen to pass an examination before being allowed to do work in that city. This ensures a high grade of work and protects the health of the community very thoroughly. It also puts the plumbing trade on a high standard. We would recommend that other cities secure the establishment of similar examining boards.

We would also recommend that a separate vice-president be appointed for Saskatchewan.

CHARLES TAYLOR, Brantford,
Secretary of the Resolutions Committee.

We recommend that sanitary committees and select committees reports be received.

E. J. YOUNG,
CHAS. TAYLOR.
Committee.

On motion of John Watson, and Walter Ryan it was decided to take the report up clause by clause.

Clause 1, re permanent paid secretary —referred to new executive to report at next convention.

Clause 2, re change of name, proved a bone of contention, and over two hours were spent on discussions of the relative merits of Provincial and Dominion charters, and the effect of a change of name.

Proposes Change in Name.

E. J. Young moved, seconded by J. Eggett, that "this association change its name from the "National Association of Master Plumbers" to that of the "Canadian Society of Sanitary and Heating Engineers."

Immediately a number of speakers were on the floor claiming privilege, the speakers on the question including Messrs. Cooper, Mahoney, Watson, Knox, McMullen, Young, Eggett, Sime, Chandler, Maxwell, Ross, Band, Farrell, Caslake and Glynn.

In the discussion it was stated that Ottawa plumbers no longer call their association "master plumbers," but "sanitary and heating engineers."

Robert Ross said he was 46 years in the business and was not ashamed to call himself a plumber. He did not see why the association should change its name. (Applause.)

Louis Legrow said that without decrying the name "plumber" it must be recognized that conditions had changed —that instead of a plumber being now a worker in lead, he had developed into a scientific man who had to be conversant with hydrostatics, geometry, syphonage, etc. He did not confine his attention to drainage, in fact that work had been left behind. He had become a man of science and should take his place as such. But unless plumbers demanded recognition themselves the public and the boards of health would not give it to them.

J. E. Farrell, North Bay, strongly favored the proposed change and took exception to the statements that no change has come over the plumbing trade. He had, and no doubt there were others, continually to read the trade journals to keep in touch with his trade and to know how plumbing work is going on. There are questions of sewage disposal, septic tanks and other matters that are new these days and that were not talked of years ago.

John Watson moved an amendment, seconded by F. Maxwell, that "this matter be referred to the incoming executive, as well as the revision of by-laws, and that the executive report at the next annual convention." A poll was called for and the amendment carried.

The remaining clauses were adopted without discussion, the executive being instructed to act upon the suggestions made by Vice-Presidents Walsh and Young.

Treasurer's Report.

Treasurer Mahoney reported a balance on hand at the beginning of this year of $262.67, while receipts during the year were $240.01, making total receipts of $502.68. Expenditures during the year were $265.70, leaving a balance on hand at the close of the convention of $236.98.

E. J. Young reporting for the auditing committee, stated that they had

audited the treasurer's books and found the above statement to be correct.

Secretary Munday was voted $100 for the past year's work on motion of F. Maxwell and J. Eggett.

ALD. HARRY MAHONEY, Guelph,

Retiring Treasurer and Probable President of Ontario Association.

Nominating Committee.

The nominating committee's report was read by William Mansell as follows:

"After due thought and deep consideration for the interest and welfare of our National Association, we beg to lay before the convention the following names for your approval as being the best for their respective positions. In weighing these names in the balance our recommendation is based on the ability,

WILLIAM MANSELL, Toronto,

Chairman of the Nominating Committee.

the interest and devotion shown in the work of organization."

The names suggested by the committee were accepted without a single change, the only question arising over the secretaryship, Mr. Legrow hesitating about accepting. Mr. Mansell referred to his good work as financial secretary of the old Ontario Association and as chairman of the local association a year or two ago and said there was no one who could so well undertake the work of the office at this time as Mr. Legrow if he would consent to sacrifice a little of his time. There was no question about his ability. After considerable hesitancy Mr. Legrow withdrew his objections.

The elections were unanimous in every case as follows:

Officers Elected.

President, G. H. Cooper, Toronto.
Vice-Pres., J. E. Walsh, Montreal.
Secretary, Lewis Legrow, Toronto.

LEWIS LEGROW, Toronto,

Former Secretary of the Ontario, and now Secretary of the National Association.

Treasurer, E. D. Higginbotham, Fort William.

Provincial Vice-Presidents.

Nova Scotia, Frank Dexter, Truro.
New Brunswick, G. E. Blake, St. John.
Quebec, H. W. Munday, Montreal.
Ontario, R. J. Shannon, Toronto.
Manitoba, R. Thomson, Winnipeg.
Saskatchewan, A. D. Henriehs, Moose Jaw.
Alberta, E. J. Young, Calgary.
British Columbia, R. C. Hodgson, Vancouver.

Chairmen of Committees.

Legislative, H. A. Knox, Ottawa.
Sanitary, Geo. Ross, Brockville.
Apprenticeship, Jas Griffin, Montreal.
Essay, J. E. Farrell, North Bay.

Next Meeting Place.

Hamilton and Ottawa were nominated as the place for the 1912 convention, but both withdrew after W. B. Sime, Port Arthur, had extended a cordial invita-

R. THOMSON, Winnipeg,

Elected Vice-President for Manitoba for Coming Year.

tion to visit the "Twin Cities," Port Arthur and Fort William, next year.

The "Twin Cities," therefore, secured the decision without a count.

A general expression of opinion was given in favor of changing the date of meeting to a less busy time and the executive were instructed to select a date about the end of May or early in June.

FRANK DEXTER, Truro,

Again Elected Vice-President for Nova Scotia.

Supply Houses Criticised.

A resolution put forward by F. Maxwell and H. A. Chandler "That the practice of supply men selling goods at jobbers prices to men in contracting work is vicious to the trade and severely condemned by this association and a copy of this be sent to every supply house and manufacturer doing business in Canada," was adopted after a lengthy discussion. "It is not strong enough," said one delegate and the opinion was strongly in favor of this sentiment. No change was made in the wording, however, it being left with the executive to take up with the manufacturers and supply men.

Secretary Legrow, of the local committee, exploded a bombshell in the convention when he stated that the supply men had held a meeting and entered into an agreement not to recognize our convention by making exhibits in our hall. Some of the supply houses had decided to exhibit, however, after they saw that the convention was going to be a big one and on Wednesday morning Mr. Rankin, acting for the supply association, had come into the exhibition hall and ordered several firms to withdraw their displays.

"What do you think of this combine?" asked the speaker, who went on to say that it looked as though their Canadian trade paper was also being

H. A. CHANDLER, Ottawa.
Who Strongly Advocated Changing the Name of the Association.

punished for helping the trade to reorganize, as the supply houses did not advertise in it.

Several delegates expressed themselves forcibly regarding the actions of some travelers who were not in favor of seeing the master plumbers organized and who carried information about prices on jobs to price cutting firms.

A meeting with the managers of the supply houses was proposed but the general opinion was that time could not be spared and as the work of re-organization was progressing satisfactorily the "knockers" should be disregarded at present.

Reference was made to how one firm had sold a bill of goods at wholesale prices outside the trade in Guelph and how it took the concern six months to get back its former trade in that city.

Several delegates gave instances of how they had suffered from unfair practices on the part of concerns selling to the trade and claimed that the manufacturers and supply houses, who were themselves organized, were responsible for the price cutting now rampant in the plumbing and heating trades. "The supply men and manufacturers are standing in their own light," said one delegate, who seemed to express the unanimous opinion of the meeting.

FRIDAY MORNING.

The concluding session was one of the most interesting, the minutes of the previous sessions being reviewed, following which came the installation of new officers.

In accepting the vice-presidency, J. E. Walsh asked a pertinent question regarding conditions in Toronto. Coming from a city where master plumbers, large and small, French and English speaking, were united, and the best of feeling existed between the supply houses and the masters, it was hard for him to understand conditions in Toronto where the supply men and manufacturers seemed to want the benefit of organization for themselves solely. And it was hard to understand why there should be two associations of master plumbers, one made up of the large and the other of the smaller firms. No one undertook to answer Mr. Walsh's rebus: Why is this thus?

J. E. Farrell, in accepting the chairmanship of the essay committee, also had something interesting to say, his point being that there is too much time spent on good fellowship and too little on business at plumbing conventions. The supply men, he contended, are allowed too much liberty to entice delegates away from convention meetings. They should be kept away until the last day of the convention. Entertainment should be made secondary to business as pleasant days at conventions may mean hard days at home. Delegates should attend to convention business as they look after their own business at home, everything being done on strict business lines, reports being typewritten on association stationery. He would also try to encourage more the reading of more essays on trade problems at convention meetings and thought at least one full day should be given up for discussions of this nature.

"When I entered the business I thought it would be a cinch to get 20 per cent. on the business I did," said Mr. Farrell, "but now I find it hard to

J. E. FARRELL, North Bay,
Chairman of the Essay Committee.

average ten per cent. on the year's business. It is only by collective effort that we can improve our position."

Discussion on Trade Problems.

James Marr, Calgary, agreed with Mr. Farrell that more time should be devoted to the practical end of the business. "We are here to better sanitary conditions, to try to bring about better sanitary conditions in the homes of the citizens. It is not merely a question of dollars and cents," said Mr. Marr, who introduced resolutions expressing disapproval of traps with hidden tongues, commonly known as the "D" or "Bower" trap, and also of non-accessable hidden overflows.

A Montreal delegate said these were condemned in that city by the inspectors and delegates from other places said they were not allowed to be used in their districts. Mr. Farrell said they were allowed in Cleveland under certain conditions. "We know as practical men that the "D" trap is not a good one and we ought to condemn it in order to help places which may revise or adopt new by-laws," said Mr. Maxwell, Toronto, and the resolutions were adopted without an opposing vote.

Plumbers on Health Boards.

On motion of H. Mahoney and H. A. Chandler, it was resolved that in the interests of the health of our citizens, plumbers wherever possible, should be-

come members of the local boards of health and should have representation on the Provincial Board of Health.

J. A. Caslake, a member of the Collingwood Board of Health, endorsed the suggestion and told of instances where he had found unsanitary conditions with stagnant water under houses and how landlords had been forced to remedy the matter by the board to protect the families of tenants from disease. The resolution was adopted.

A GROUP OF NEXT YEAR'S OFFICERS.
Harry Munday, J. E. Walsh, George Cooper, R. J. Shannon, Lewis Legrow and W. B. Sime (treasurer by proxy).

Trade Paper Thanked.

H. Mahoney moved, seconded by J. E. Farrell, "that the thanks of the convention be extended to the Plumber and Steamfitter of Canada, and Mr. Wrigley, its editor, for the able assistance given the officers of our association, in making this convention such a successful gathering."

"If we had not had the Plumber and Steamfitter in Toronto this convention would not be meeting here to-day," said Ald. Mahoney, "it has talked organization incessantly without much encouragement and the results of its work is seen by the large attendance at this convention. I cannot write articles myself but I think everyone who can assist our Canadian trade paper in any way should do so."

J. E. Farrell was equally strong in his expression of praise and said the large delegation present from Northern Ontario was directly due to the articles on organization in the Plumber and Steamfitter.

The motion was adopted and thanks was also extended the Plumbers Trade Journal, New York, for again sending a representative to report the convention.

James Marr, Calgary, said a committee ought to be named to review articles in the trade papers and referred to one he had recently seen in a United States paper describing the work of a plumbing trade school, the teaching being contrary to the principles upon which plumbing work had been done in his experience. Such articles were apt to lead assistants astray unless corrected and a committee such as he suggested could deal with matters of this kind.

Weston Wrigley, editor of the Plumber and Steamfitter, thanked the convention for their appreciation of the work of the paper and said the paper and its staff were always at the service of the trade. "So far as subscriptions are concerned," he said, "you have done about all you can do. We have almost the complete list of the plumbers in Canada as subscribers. But we need your assistance in making the paper of greater interest technically. We can give you the news of the trade, we can boost association work, but unless you help us by sending descriptions of your work or by contributions for our "questions and answers" department our paper will not be as interesting as it should be. We are willing to pay for articles on trade subjects and as our advertising patronage increases we will be able to improve the paper. See that the firms you buy from, therefore, advertise in your trade paper and you will be helping the paper that is trying to help you."

Both Mr. Wrigley and Mr. Brogan, of the Plumbers' Trade Journal, assured Mr. Marr that they would welcome criticisms of any articles published as it was only by discussion that knowledge was increased.

Local Committee Thanked.

H. A. Chandler, Ottawa, moved and J. E. Walsh, Montreal, seconded a resolution of thanks to the local committee for their work in making the convention arrangements and for the entertainment provided.

"I have been wonderfully impressed with this meeting," said Mr. Chandler. "I did not expect to find such an active

THE LOCAL COMMITTEE AND OTHER TORONTO PLUMBERS.
D. McMullen, Dan Glynn, John Wright, Frank Maxwell, R. J. Shannon (chairman), George Cooper, Harry Hicks, G. F. Frankland and Lewis Legrow (secretary).

organization and splendid convention cementing the plumbers of the Dominion together. I am sorry that the convention did not see its way clear to change its name at this meeting but feel sure the new executive will take this progressive step. I am getting on in years but I hope to see many more advances and changes in the trade in my time."

Scanlan Distributing the Chocolates.

J. E. Walsh said that knowing the conditions in Toronto he had not expected much of a convention but he had been agreeably surprised and he felt sure every visiting delegate would carry away pleasant recollections of their visit to Toronto during the convention.

James Marr, Calgary, and W. B. Sime, Port Arthur, spoke for the delegates from the west and extended a welcome to as many as possible to attend the next convention at Port Arthur.

Frankland was the Busiest Man on the Mantelpiece.

The motion was adopted along with one thanking the retiring officers for their services.

The convention adjourned Friday at 1 p. m.

ONTARIO PLUMBERS HOLD MEETING.

On Thursday morning before the convention, about a score of Ontario delegates answered the call of Ald. Mahoney to come together and consider the formation of a provincial association. Sentiment was unanimous in favor of organization but as the delegates felt that they were infringing upon the time of the convention no definite action was taken other than to call a second meeting for Friday morning before the closing session of the convention.

At the second meeting J. E. Farrell, North Bay, acted as chairman. Several delegates expressed themselves regarding the advisability of organization, not for the regulation of prices, but for the betterment of sanitary conditions by co-operating with the Provincial Board of Health.

Harry Mahoney and Dan Glynn Watching the Fireworks on the Upper Deck.

Delegates from Port Arthur and Fort William promised to affiliate 20 strong with the new provincial association and other places followed suit so that a good membership is assured at the offset.

Motions were adopted instructing R. J. Shannon, provincial vice-president, to appoint a committee to assist in organizing the province, the committee to secure information regarding plans of organization, regarding the powers of the Dominion charter of the Retail Merchants' Association and the advantages of affiliation with that body, this information to be submitted to the trade during the coming month and a convention to be called to meet in Toronto on Thanksgiving day, the third Monday in October.

Master plumbers having suggestions to make regarding the proposed provincial association are urged to submit their views to R. J. Shannon, 1233 Queen street, west, Toronto.

THE AMUSEMENT SIDE.

The entertainment provided by the Toronto master plumbers and the way the reception committee looked after all the arrangements for the convention and the comfort of the delegates and visitors were favorably commented upon by all the visitors.

Jack Birchard in his Imitation of a Steam Caliope.

A Dance Ended the Programme.

On Wednesday evening a moonlight excursion was held. The steamer "Macassa" of the Hamilton line was chartered for the occasion, and it was a very happy party of 250 plumbers, their wives, sweethearts and friends, not to

mention the lighthearted supply travelers, which enjoyed the three hours' sail on Toronto Bay and Lake Ontario.

Nobody missed the moon. In fact its absence was welcomed when the boat stood off the Island and the Exhibition Grounds while the fireworks were being displayed. An excellent orchestra provided a classical musical program, and when the upper deck was cleared dancing was indulged in by the younger folks. The singing of a number of the convention songs warmed up the crowd before the boat had reached the eastern gap. Boxes of chocolate were distributed to the ladies by Bob Shannon and George Frankland of the local committee.

On Thursday evening a theatre party was made up and a visit paid to Shea's vaudeville house, where a splendid program was put on and much enjoyed by

FOUR OF OTTAWA'S DELEGATION.

Harry Knox (ex-Natnoial Secretary), F. G. Johnston (ex-National President), J. P. Band and H. A. Chandler.

GATHERING FOR THE CONVENTION.

Delegates Assembling Outside the Convention Hall.

the delegates, guests and lady friends. The orchestra played a medley of convention airs and Tom Mahoney proved himself the star of the evening with his take-off on a plumbers' meeting.

After the show the party adjourned to Williams' cafe, where a tempting spread was laid out. At the head table with the newly-elected President in the chair were G. E. Gibbard, secretary of the Toronto Retail Merchants' Association, Tom Mahoney, from Shea's and R. J. Shannon.

During the evening the choir, led by C. C. and A. L. Macdonald, Weston Wrigley and Lew Legrow led the singing of the plumbers' songs, the choruses and refrains being taken up by the assemblage. The singers parodied all the officers from George Cooper down, and Tom Mahoney put a crimp in his namesake from Guelph by telling him how his name should be pronounced.

James Fiddes, of the James Morrison Brass Mfg. Co., rendered a tenor solo which delighted his auditors.

The only serious speech was made by Mr. Gibbard, who told how the Retail Merchants' Association had obtained their Dominion charter, and what benefits accrued to them thereby.

The party dispersed shortly after midnight.

Bob Shannon and George Frankland sure were the candy kids on the moonlight. The ladies were right after them.

On Friday afternoon, the Montreal crowd went over to the Island to see Montreal and Toronto play baseball. Munday won $10 on Montreal's victory. There was small chance of Toronto winning with rooters like Walsh, Gordon, Conroy, Munday and the rest of the Montreal crowd yelling for Montreal, even with Dinny McMullen there to hold up Toronto's end.

FIVE OF MONTREAL'S LIVE WIRES.

J. E. Walsh (National Vice-President), H. Munday (last year's National Secretary), L. J. Conroy, and John Watson, and John A. Gordon (former National Presidents).

THE TRADE EXHIBITION.

In a large hall adjoining the convention meeting room about a dozen firms made displays of their goods and had dozens of interested visitors during the hours when the convention was not in session. It made an ideal assembling place for the delegates, where they could spend spare time and be gaining knowledge before and after the meetings. And it was far better for the convention officials to have the delegates at hand when wanted than to have them taken away in the autos of supply houses and lost to the convention altogether. Several otherwise active delegates had to be put on the "missing" list for this reason.

That the displays made by the exhibitors were interesting was illustrated in more than one way. For instance, W. J. Clark, Hamilton, was looking over the Wolverine exhibit, when he picked up a casting to be attached to closet seats to prevent urine from escaping between the seat and bowl, this being a common complaint where the fixtures are used largely by women. "That's a specialty I have been looking for a long time," said Mr. Clark. "Possibly some traveler may have had it with him when calling on us and I have been too busy to look over his line carefully. But here I'm free from business cares and can take time to look over the large variety of goods on display."

The Wolverine Co.'s exhibit, as will be seen by the photograph, contained a large showing of the numerous specialties manufactured by them. Time did not permit it being put together as attractively as Mr. Lamond desired, but the firm was there with the goods and they always had an interested crowd. Assisting A. S. Lamond, secretary, were Charles Bakemeyer and W. H. Darling.

Macdonald & Sons', Toronto, display of "Star" boilers and radiators, pipefitting and cutting tools, was probably the most frequented of all the displays, they making a practical demonstration of how easy it was to cut pipe with their "Vosper" pipe cutters; how the "Positive" chain tongs gripped the pipe; how their "Toledo" and "Jardine" tools threaded pipe, and their new bench vise worked so simply and easily. The supply house travelers in the nearby displays booked quite a number of orders from customers who saw the Macdonald line of tools in operation. P. E. Macdonald and his sons, A. L. and C. C., did the honors in the demonstration.

The Ideal Manufacturing Co., Detroit and Windsor, made a fine display of their gas ranges, closet combinations, gas water heaters and other specialties, a picture of their display being also shown. W. H. Cunningham, their Ontario representative, was in charge.

The James Morrison Brass Manufacturing Co., of Toronto, had an attractive display, of which S. T. Hadley was in charge. It included plumbers' small lines, such as valves, faucets, etc., and also several types of closets.

The display of the Standard Sanitary Manufacturing Co., Toronto, included some of the most important of modern fixtures that combine to make the bathroom not only a convenience, but a luxury. Baths, closets, etc., were shown, and the outstanding qualities of Standard goods were pointed out to the visiting plumbers by C. H. Doughty and E. A. Laidlaw.

The National Supply Co., Toronto, were on hand with some catalogues and literature, in charge of S. Cruickshank and D. Wilding.

W. B. Malcolm, Toronto, had a table full of the various fittings and specialties he manufactures.

The Montreal Rolling Mills' branch of the Steel Company of Canada had a display of iron pipe, etc., in charge of G. D. Clewes, who is always on hand when a plumbing convention is called.

The Vento Heater Department, of the American Radiator Co., Chicago, was represented by J. H. Davis, who is pushing his line very aggressively in Canada at present.

A. L. Phipps, of the B. O. T. Mfg. Co., Toronto, also showed a sample of their high-grade closet combination.

Splendid Display made by the Canadian Wolverine Co., Ltd., Chatham, in the Exhibition Hall.

SUPPLY MEN PRESENT.

Among the supply men seen around the convention and exhibition halls during the meeting were the following:

P. E. Macdonald, A. L. Macdonald and C. C. Macdonald, Macdonald & Son, Toronto.

A. S. Lamond, C. H. Bakemeyer and W. H. Darling, Canadian Wolverine Co., Chatham.

W. H. Cunningham, Ideal Mfg. Co., Detroit.

S. T. Hadley and Jas. Fiddes, James Morrison Brass Manufacturing Co., Toronto.

F. T. Rawley, Honeywell Heating Specialty Co., Montreal.

G. D. Clewes, Montreal Rolling Mills' branch of the Steel Company of Canada.

E. A. Rogers, S. Cruickshank and D. Wilding, National Plumbing Supply Co., Toronto.

C. H. Doughty and E. A. Laidlaw, Standard Sanitary Mfg. Co., Toronto.

A. D. McArthur, C. E. Shirreff and Wm. Linton, Standard Ideal Co., Port Hope.

George A. Allen, Taylor-Forbes Co., Guelph.

J. H. Davis, Vento Heater Department, American Radiator Co., Chicago.

A. L. Phipps, B. O. T. Mfg. Co., Toronto.

W. B. Malcolm, specialty manufacturer, Toronto.

PIPE DREAMS.

The members of the committee and those in the know paid many visits to the smoking room on the top deck to view the fireworks.

The travelers' choir headed by Jack Burchard of the King Radiator, dis oursed "sweet" music at the stern of the boat, making an excellent imitation of a circus calliope.

Ernie Laidlaw and L. H. McKellar started the light fantastic part of the proceedings. They had everybody's feet moving before the evening was done.

will be some day in spite of his bashfulness. But that can wait until after he has been Mayor of Guelph—of which there is a good chance next year.

When Conroy and Gordon went up against Walsh and Cleves, of the Montreal Rolling Mills, in a game of bowling at Orrs' alleys they had their work cut out to win.

Charley Bull, of St. Thomas, got into trouble by trying to dance with Mrs. Munday on the moonlight and appealed to Mayor Geary to fix it up with Munday, as he said he had been given the freedom of the city.

Charley Hicks would be some dancer, if he would not take up so much room on the floor.

Charley Bakemeyer, of the Canadian Wolverine Manufacturing Company, was

Ideal Manufacturing Company's Display of Gas Ranges and Plumbing Supplies in the Exhibition Hall.

R. J. Cluff, J. Wilson, J. Birchard, Jas. Bell and L. V. McKellar, King Radiator Co., Toronto.

E. Holt Gurney and C. E. Oldacre, Gurney Foundry Co., Toronto.

P. McMichael, T. Worthington, G. T. Wilson and Chris. Bird, Dominion Radiator Co., Toronto.

H. W. and L. L. Anthes, Anthes Foundry, Toronto.

S. Ryding, Monarch Brass Co., Toronto.

R. J. Miller, Pease Foundry Co., Toronto.

J. A. McLaren, T. H. McLaren, and Chas. Childs, Canadian Brass Mfg. Co., Galt.

Lew. Robb, Empire Brass Mfg. Co., London.

Louis Payette, Montreal.

C. L. Brewer, Thomas Robertson Co., Montreal.

George McQuillan, James Robertson Co., Toronto.

J. Sherlock's calling off at the dance was a treat. He got even with a lot of his enemies before he quit—George Cooper especially.

E. J. Young and Mrs. Young, with James Marr, of Calgary, were left out of the convention photograph. So were the five delegates from Ottawa and J. E. Farrell, North Bay, who did not arrive until Thursday morning.

On Tuesday night, George Cooper took the Montreal delegates to Scarboro Beach to see the sights. Munday and Conroy went down the "Bumps."

Harry Mahoney asked to be relieved of office and as he is taking the lead in the organization of the provincial association and will probably be its first president, his wish was gratified. Harry richly deserves election to the presidency of the National Association and he

much on the level. The Wolverine people giving away a pocket level as a souvenir.

Charley Melhuish was the only plumber in the orchestra on the boat the night of the moonlight.

H. A. Chandler, Ottawa, was probably the youngest "old" man present, his ideas being as progressive as the most enthusiastic of the younger section. Mr. Chandler should have been "Oslerized" two years ago, being fourteen years of age when he first took up the tools in Ottawa in 1872. Ten years later he joined the Ottawa Master Plumbers' Association, and has been connected with it ever since, having seen evolution bring the business from the hand pump to the modern city waterworks system stage. His aggressive championing of the change of name indicates he still has a keen eye for progress in his chosen vocation.

C. Weeks, who represented the Vancouver Association, is a father of "Bert" Weeks, for several years vice-president for British Columbia. He is also an old friend of Robert Ross, the latter having succeeded him in basiness in Toronto many years ago.

The Toronto daily papers, particularly the "Telegram," used yellow journal tactics, in trying to stir up strife between the master plumbers and Dr. Sheard. The Durham system, which the Telegram had a lot to say about, was not discussed by the convention at all, being merely referred to in the opening remarks of one speaker.

G. F. Frankland made an excellent sergeant-at-arms, always willing to oblige and always on the job.

R. McG. Coyle, Chatham, didn't have much to say but he'll be a valuable association member. And the same can be said of the two Peterboro delegates, Messrs. Sutherland and Sturgeon.

Harry Knox wouldn't leave Ottawa until he had a delegation of four others to come with him. And that don't count Master Knox, who always accompanys Harry.

The north country certainly did well, Aurora, Barrie, Orillia, Bracebridge, North Bay, Sudbury, Haileybury and New Liskeard, and counting the "Twin Cities" delegation they numbered twelve in all.

And Eastern Ontario wasn't much behind with five from Ottawa, two from Peterboro, and one each from Brockville, Belleville, Trenton and Port Hope.

But Western Ontario was surely in line with four from Hamilton, four from Guelph, two from London, two from Stratford, two from St. Thomas, and one each from Chatham, Goderich, Collingwood, Inglewood, Galt, Paris, Brantford, Burlington Ridgeway and Niagara Falls, an even two dozen.

E. D. Higginbotham, Fort William, the new treasurer, had to visit the hospital in Toronto to have a wound dressed, there being danger of blood-poisoning from a cut received about a month ago.

A. D. Henricks, Moose Jaw, elected vice-president for Saskatchewan, had an article on bookkeeping in the plumbing business in the Plumber and Steamfitter a couple of months ago. If he does as well at the organizing game as he did in his article, he will have something interesting to report about Moose Jaw, Regina, Saskatoon and other places at the "Twin Cities" convention next June.

The hall was large enough to seat 250 or 300 but its acoustic properties were very poor. Delegates found it very difficult to keep track of what was being said by the various speakers.

Those long words in Jim Walsh's report were too much for Harry Munday, who blamed it on the writing and quit cold. The drinks were on Harry that time, and no mistake.

A boat trip to the "Twin Cities" next June would be nice if the weather man was fixed.

R. Thomson, Winnipeg, the new vice-president for Manitoba, is the head of the well-known firm of Thomson & Homer. George E. Blake, St. John, and R. C. Hodgson, Vancouver, the new vice-presidents for New Brunswick and British Columbia, are also successful master plumbers. They will disappoint their friends if they renig or fail to make good.

"Did anybody here see Powers?" was asked by J. E. Farrell and others. But the Nova Scotia man who was such a factor at last year's convention at Montreal wasn't on the job—though there were one or two others there who have relations in the Emerald Isle.

Was there ever so many plumbers at church before as were on the steps of the Metropolitan to face the camera?

The Calgary and "Twin Cities" delegates made a host of friends during the convention. Here's hoping to see them, and a lot more progressive westerners, at next year's convention.

"Lawrie" Antles' gasolene buggy was kept busy during the convention, a party of ladies being his guests after the photograph was taken Wednesday afternoon.

Jack Marshall, of Port Arthur, was kept away owing to illness.

Those convention songs certainly helped some The Plumber and Steamfitter of Canada presented the local committee with 500 programmes containing the ammunition for the "choir."

VANCOUVER PLUMBERS' PICNIC.

Vancouver, Aug. 27.—The Vancouver Master Plumbers' Association held their first annual picnic at Bowen Island last Wednesday. It has been found that an association brings business interests closer together to the mutual advantage of all concerned, and social gatherings complete the harmony essential to successful organization. The picnic was very enjoyable, nearly 200 being present, what with women and children, and while at the island all kinds of sports were indulged in. Harper's orchestra provided a delightful programme of dance music. Much of the success of the affair was due to the efficient arrangements completed by President P. W. Orr and the committee, consisting of E. A. Hurst, M. J. Barr, A. Green, R. A. Townley, Walter Murray, J. C. Anderson and R. C. Hodgson.

One of the events of the day was a well-contested baseball game between representatives of the master plumbers and the supply houses. This was won by the former, with a score of 16—7, each member of the winning team receiving a new hat, donated by the firms of Robertson-Godson Company, Leek & Company and Crane Company.

In the evening there was a tug-of-war, when the plumbers again won, the winners getting an umbrella each. So it was a successful picnic for those who were in each list.

An improvised sack race was won by Mr. McPherson, who received a $5 prize.

R. Murray won the 100-yard race, E. Kendall being second. P. W. Orr donated an umbrella to the winner, while the second got a razor, given by C. A. Hurst.

In the 50-yard ladies' race, Miss Rose got the first prize of a tea urn, donated by the Gurney Foundry Company, while the second prize was won by Mrs. Hegie, who received a box of gloves, offered by W. N. Hinsdale.

The fat man's race was one of the events of the day, and in this Matt Barr had the advantage. He is an old lacrosse player and was in good form to pull down the ton of coal put up by Evans, Coleman & Evans, Mr. McQuage got second, a knife, donated by McDonald & Moore.

There were several entries in the fat woman's race, excellent prizes being offered. Mrs. Gardner took the pudding dish, given by Taylor, Forbes & Company, to the winner, while Mrs. Affleck got the second prize, a locket, donated by R. F. Scott.

In the 50-yard girls' race, Gladys Harvey was first, and Doris Taylor second. Another race was won by Miss Townley, Miss Phillips and Miss Kinsey, the winners taking scissors, given by A. Green.

Boys who won knives donated by Hodgson & Company were Barton, Gardner, Dixon and Allison.

The master plumbers were provided for, J. Lee coming in first and S. Wye second.

Then the master plumbers' wives took a run after their husbands, as usual, Mrs. Barr, Mrs. Mortimer and Mrs. Mitchell being victorious.

Mr. Taylor, in the 100-yard race for shop foremen, won a handsome bicycle, put up by Bruce & Swan.

The city plumbing department was upheld by Mr. Norton and J. Pitman.

In other events, such as three-legged races, pipe races and committeemen's races, Messrs. Fulton, Taylor, Lee, Kendall, McPherson, Green, Orr and Hodgson were successful. In fact, the committee had looked out for all so well that prizes were exceedingly well distributed. The donations were very handsome in many instances, among the firms contributing being W. N. O'Neill & Company, Peck & Company, Fairbanks Company, Alcock, Downing & Rose, G. E. Griffiths, Simson, Balkwill & Company.

The Question Box

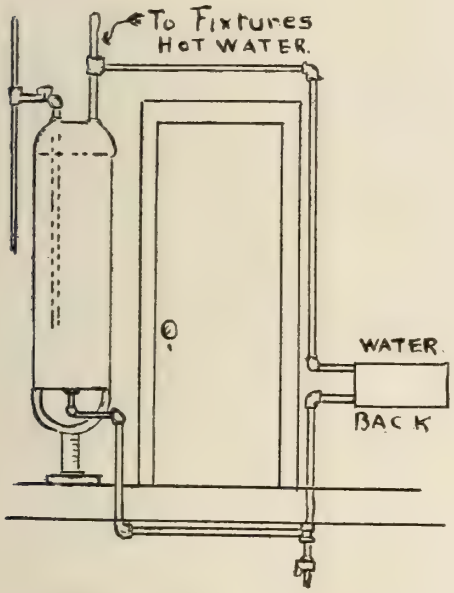
Subscribers are Urged to Send Questions to be Answered, or to Comment on Letters Published. Descriptions of Jobs Done or Shop Kinks are Also Invited.

PIPING AROUND DOOR.

Editor Plumber and Steamfitter.—Please find enclosed rough sketch of a kitchen and bathroom on ground floor. The hot water boiler is to be placed in the bathroom to the right of the door. Kindly advise me the best way to pipe from the range to the boiler and pass the dining room door and get the proper circulation. H.E.S.

Strathroy, Aug. 22.

We answer this by giving a sketch taken from "Johnson's Handy Manual," which will easily explain itself. In connection with this we would advise that the supply pipes to fixtures be run on the ceiling, and thence dropped to the fixtures. As the desired location of the fixtures is not given in sketch that has been sent, we can not give further information, but trust that what has been given will be of assistance, as the main thing required seems to be to get around the door.—D.C.H.



Method of Piping Around Door.

INSTALLING RAIN LEADERS.

Editor Plumber and Steamfitter.—Will you be kind enough to give me a few pointers upon the way to put in the rain leaders and greatly assist one who is interested in the matter?

Northern Ontario, Aug. 26. R.A.

Rain leaders are placed either upon the inside or upon the outside of the building. Those outside are generally (though not always), constructed from sheet metal, and are connected together by means of slip joints. The inside work is done with either wrought iron pipe or cast iron pipe and the workman should see to it that every joint is perfectly tight and that there is no imperfect pipe used on the job. Some sanitary regulations do not call for the trapping of these rain leaders, while in other places it is demanded that a running trap be used and placed so as to be entirely protected from frost.—D.C.H.

AMOUNT OF WATER.

Editor Plumber and Steamfitter.—Will you tell me the amount of gallons that a four-inch and also a six-inch sewer will carry at various inches of "fall" from one to twelve inches?

Toronto, Aug. 28. S.J.L.

A four-inch pipe, with 1" fall per 100 feet will carry 21 gallons; with 2" fall, 38 gallons; with 3" fall, 47 gallons; with 6" fall, 66 gallons; with 9" fall, 81 gallons; with 12" fall, 93 gallons.

A six-inch pipe with 1" fall per 100 feet will carry 75 gallons; with 2" fall, 105 gallons; with 3" fall, 129 gallons; with 6" fall, 183 gallons; with 9" fall, 224 gallons; with 12" fall, 258 gallons.—D.C.H.

VACUUM HEATING VS. COAL SAVING.

Editor Plumber and Steamfitter.—Are you able to tell me the amount of fuel that a good vacuum heating outfit will save as compared with the ordinary gravity heating steam apparatus?

Vancouver, Aug. 20. INFORMATION.

If the writer of this question will inquire from the various firms who are in the market with vacuum heating apparatus he will probably be able to get much more guaranteed information than we are able to furnish. However, we may say that speaking generally, it is claimed that a reliable vacuum outfit, if installed with the proper amount of care by a man who knows his business, will save anywhere from 25 to 35 per cent. of the fuel. One reason why vacuum jobs have failed to give entire satisfaction is that the fitter who put in the work took so little pains with the work. He expected the leaks to "take up" and let it go at that. Some men have a horror of vacuum work and consider it almost impossible to get a tight job; yet the same man will do a gas job and make it pass the inspector every time. It is a case of straining at a gate and swallowing a saw mill.—D.C.H.

PAINTING RADIATORS AGAIN.

Editor Plumber and Steamfitter.—We beg to refer to the article on page 14 of your publication dated May 2, 1910, about painting radiators. The reason we did not refer to this article before is that a few of our customers have drawn our attention to it in the mean time. We are at a loss to understand how you can give out a statement, which every experienced steamfitter will tell you to be perfectly wrong. It is a well known fact that painting radiators with body colors or enamels will materially affect the conductivity of heat, and will naturally cause considerable loss of heating power.

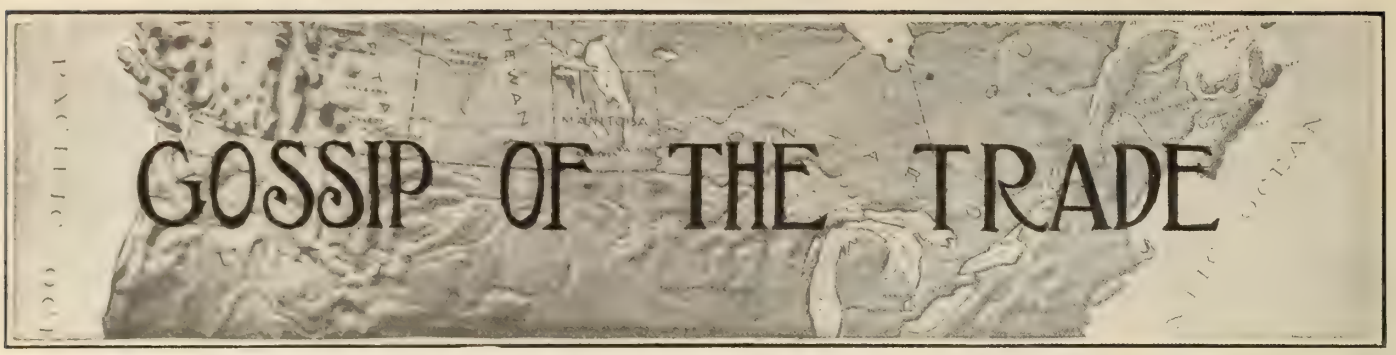
We might say for your information that bronze powder practically is an alloy of copper, zinc and tin, which is the best heat conductor known. The vehicle we use, commonly called Bronzing Liquid, which we make for applying the bronze powder on the radiators is specially made for the purpose, to be very thin, and of high resisting power to heat.

We cannot understand how you can say that the thickness of the coat has nothing to do with the amount of heat thrown off, as this depends entirely upon the radiating qualities of the material. We might say that if you put on a thick enough coat the radiator will be so perfectly insulated that no matter how much coal will be put in the furnace the room will be perfectly cold.

The same may refer to your statement that the efficiency of radiators can be greatly improved by using paint, even if you paint directly over the bronze. We trust that you will refer to this matter in your next issue contradicting D. C. H.'s statement of May 2.

THE CANADIAN BRONZE POWDER WORKS.
R. E. Thorne & Co.

Montreal, Aug. 20.



A. J. Scott & Co., tinsmiths, Magog, have been registered.

Galipeau & Faubert, plumbers, Montreal, have been registered.

Henry Heisel has started a tinsmithing business at Strathcona.

The assets of J. R. Painchaud, electrician, Montreal, have been sold.

Jones & Sylvester, tinsmiths, Moose Jaw, are succeeded in business by Jones & Ross.

P. J. Sheehy, formerly of San Francisco, U.S.A., has opened a plumbing shop in Calgary, Alta.

W. J. McGuire, Limited, have withdrawn their tender for heating the palm house at the Allan Gardens, Toronto.

H. M. Swegles, tinsmith, Comber, who recently disposed of his business to Thos. Beattie, has purchased a business at Fonthill, Ont.

The matter of a city plumbing inspector will come up again at the next meeting of No. 3 committee of the London City Council.

Chas. E. Gate & Sons, Winnipeg, have the plumbing and heating contracts in the Stabart Sons & Co.'s new $45,000 building, at that place.

The F. C. Hunt Plumbing Co., London, assigned on August 17. A meeting of creditors was held on Aug. 25. Inspectors were appointed to wind up the estate.

The stock of C. R. Bowers, plumber Lacroix Slip, Ont., was disposed of recently at sheriff's sale. Mr. Bowers' brother, Geo. Bowers, purchased, at 65 cents on the dollar.

The annual general meeting of the shareholders of The Canada Iron Corporation, will be held at the company's offices in the Mark Fisher Building, Montreal, on Thursday, Sept. 1.

On reorganizing the staff of the Steel Co., of Canada, S. H. Whitton has been appointed assistant general manager. Mr. Whitton was formerly general manager of the Canada Screw Co., and will now assist Robt. Hobson, general manager of the Steel Co., of Canada.

Mrs. Morrison, wife of Jas. Morrison, of the James Morrison Brass Works, Adelaide St. west, Toronto, died suddenly at Wa-Wa, Lake of Bays, on Wednesday of last week. The funeral took place from the family residence on St. George St. on Friday afternoon. The works were closed during the funeral.

The Commercial Club, of Port Arthur, have erected in a very prominent corner of the business district a sanitary, cupless fountain, which is of very attractive design, and has drawn the attention of the civic authorities to the further need of such fountains being placed at different points in the city.

The Charles Gate & Sons Co., Winnipeg, capitalized at $50,000, has received Dominion incorporation to take over the business of Chas. E. Gate & Son, at that place, and to carry on the business of plumbers, steam, gas and hot water fitters, and supply and instal sprinkler systems. The incorporators are Chas. E., Henry, William, Walter, Alfred and Thomas Gate, all of Winnipeg.

J. Eggett, H. S. Laughton and H. J. Widden, have formed a plumbing company at London, under the title Eggett & Co., and have taken over the business of The Smith Plumbing Co. The new company are working on the following contracts at London:—Tuberculosis Hospital, (plumbing); Hon. C. S. Hyman, residence, (plumbing); F. Lawson, house, (plumbing and heating); W. H. Whitwam, dwelling, (plumbing and heating).

The employes of Geo. L. Landers & Co., plumbers and heating engineers, Oshawa, played a game of baseball with the employes of Gay Bros., building contractors, of the same town, on August 18, with the result that they were defeated by the score of 17 to 12. The game was very exciting. Dick Heyes and "Pat" Patterson were on the points for the losers, and A. J. Gay and Russell Gay were the battery for the winners. D. S. Doig was umpire. He made some close decisions, but gave both teams a square deal. His greatest difficulty was to keep the excited spectators off the ball ground.

The Gurney-Tilden Co., Hamilton, has been reorganized and a new charter taken out in the name of the Hamilton Stove & Heater Co., with capital of $600,000. John H. Tilden, for many years president and general manager of the Gurney-Tilden Co., retires and W. H. Carrick, formerly vice-president and general manager of the Gurney Foundry Co., becomes president and general manager of the new company. Mr. Carrick severs his connection with the Gurney Foundry Co., Sept. 1. He has been with this firm for 36 years. It is understood Cromwell Gurney will succeed Mr. Carrick as general manager of the Gurney Foundry Co.

JOURNEYMEN PLUMBERS' PICNIC.

The annual excursion of Toronto Local Union, No. 46, of the United Association of Plumbers, Steam and Gas Fitters, was held on Saturday, Aug. 20, to Cobourg, and was one of the best in the history of the organization, about 350 taking it in. A baseball game was played between teams representing the masters and journeymen plumbers. The teams lined up as follows: Master Plumbers—E. T. Needham, B. W. Schultz, C. Hicks, J. North, Joe Bell, F. Nixon, H. Pepper, D. Glynn and W. Jack. Journeymen—Geo. Glenny, D. Rattray, H. Griffiths, E. Byrne, A. Rattray, J. E. Wood, J. Scott, W. Fletcher, A. G. Copping. Bill Copping was umpire. Geo. Frankland rooted for the masters, and Geo. Kingswood did the honors for their opponents. The winners and the score will not be published because Charlie Hicks tore the knee of his trousers in sliding to second base and broke up the game.. Big Bill Storey, with his megaphone, kept order. He did some sprinting at Riverdale station, when he attempted to beat the train to get after the eatables in the baggage car. Children's races, a ball game between the plumbers and fitters, and a few swimming stunts by George Frankland rounded out the day.

BASEBALL CHAMPIONSHIP GAMES.

The final baseball games of the season at Toronto will be played at Diamond Park, Fraser Ave., on Saturday afternoon, Sept. 17, between the veteran master plumbers and the managers of the supply houses (indoor baseball); and between the master plumbers and the representatives of the supply houses for the championship of the city .

New Buildings, Water and Sewerage Systems

Opportunities Offered by Municipalities and Private Enterprise for New Plumbing, Heating, Ventilating or Sanitary Systems—Work Being Undertaken in Every Section of the Dominion.

Municipal Undertakings.

Outlook, Sask., ratepayers carried the $25,000 waterworks by-law.

The by-law to procure a system of waterworks at Orangeville was carried.

By-laws for sewerage, sewage disposal and water supply were carried by Swift Current ratepayers.

The by-law for the expenditure of $148,000 on waterworks and sewers at Lethbridge, was carried.

A by-law to expend $45,000 on waterworks extensions will be submitted to the ratepayers of Medicine Hat on Aug. 15.

The $375,000 by-law for sewer and waterworks extensions at Moose Jaw was carried.

It is proposed to extend Winnipeg's high pressure system over many of the principal thoroughfares, at a cost of $230,858.

It is probable that a by-law will be submitted for authority to spend about $5,000 on the increase of Collingwood's water supply.

Pavements, walks and sewers, totalling $224,506, were passed by Winnipeg council at last meeting and will be advertised for tenders.

The city council of Prince Rupert is calling for tenders for putting in a waterworks system, which it is estimated will cost $1,750,000.

The Outremont, Que., council has awarded contracts for the construction of six brick and three tile sewers at an approximate cost of $60,000.

The contract for the laying of the new Coquitlam pipe line at New Westminster, has been let to the Municipal Construction Co., for $108,557.57.

City Engineer Creighton, of Prince Albert, has submitted plans for a trunk sewer to cost $94,994. Construction will start as soon as the Provincial Health Department approves.

J. J. Armstrong was given the contract for sewers in the following Hamilton streets: Barton, at 47 cents a foot; Simcoe street, 44 cents a foot, and Fife street, 60 cents a foot.

Premier Whitney has given the Mayor of Toronto assurance that the proposed expenditure of $40,000 for the extension of the intake pipe for a distance of 500 feet into the lake will receive government sanction.

Chipman & Power, consulting engineers, Toronto, are preparing plans for sewerage works in the south end of Peterboro'. Tenders to include sewer construction, pumping station, machinery, etc., will probably be called in a few weeks' time.

Tenders addressed to L. A. Duncan, secretary-treasurer, Estevan, Sask., will be received until August 24 for pipe-laying on storm sewers; power house; two return tubular boilers; high speed steam engine; electric lighting system; and sewer pipes.

Public Buildings.

It is proposed to enlarge the Fredericton hospital.

A new Registry building for Toronto is recommended.

The C. P. R. will build an $8,000 station at Chase, B. C.

The C. P. R. will build a new station to cost $20,000, at Vernon, B. C.

An addition will be built to St. Anne's separate school, Toronto, to cost $9,000.

Work has been started at Shoal Lake, Man., on a new Roman Catholic Church.

Bathurst street Methodists, Toronto, will build a new Sunday School to cost $30,000.

A $12,000 church is to be built at Chilliwack, B.C., by the Sixth Avenue Methodists.

The order of the Oblates of Mary Immaculate will erect a $50,000 school at Strathcona.

A new Indian school is to be established at the Indian reservation at Oromocto. N.B.

E. R. Wildman will erect the new school to be built at Taber, Alta. It will cost $52,975.

A site has been purchased at Chilliwack, B.C., upon which a new city hall will be at once erected.

The contract for the new school to be built at Strathcona, has been awarded to Wm. Deitz, at $12,900.

Contract for the Newmarket, Ont., high school, was let to Mr. McIntosh, of Alexandria, Ont., at $13,000.

A building permit has been issued for the erection of the new St. Basil's school at Brantford, to cost, $19,900.

The Toronto separate school board, will build a two-storey brick addition to St. Peter's school, to cost, $9,000.

The Counties of Wellington and Waterloo, Ont., propose to co-operate in the erection of a large tuberculosis sanitarium.

The C. N. R. announce they will build in Calgary a combined depot and hotel, designed after the Royal Alexandria in Winnipeg.

The contract for rebuilding the Catholic church at Cote St. Paul, Que., has been awarded to contractor Martineau at $40,000.

A. E. Faulkner, Brantford, has secured the contract for the new Collegiate Institute at Dunnville. His figure was $35,000.

Rev. Father Paradis intends to erect a college large enough to accommodate 500 pupils in the Cobalt region of Northern Ontario.

The Toronto Board of Education, will erect a one-storey brick addition to school, near Lowther, on east side Huron, to cost $8,000.

The contract for the erection of an eight-room school house at North Vancouver, has been awarded to Young & Wright, at $20,000.

The Vancouver School Board will erect a new $26,000 school house in Templeton Drive, and a $50,000 addition to the Clark Drive school.

Ground has been broken for a new Methodist church in Grandview, B. C. The building will be of a temporary character, costing about $5,000.

Danforth Avenue Methodists, will build a new two-storey brick church, to cost $12,000, and the Free Masons, hall Collete St., Toronto, to cost $25,000.

The Toronto Board of Control is calling for tenders for the erection of a temporary firehall on the new Wychwood avenue site. The building will cost $2,200.

Government Architect Henderson has plans for the new post office proposed for Grand Forks, B.C. The new building will be a two-storey brick structure and will cost $40,000.

Preparations for the construction of Chilliwack's new hospital are growing apace. The contract has been awarded and actual work on the building will commence in the near future.

Tenders are being asked by Darling & Pearson, architects, for various trades required in connection with the erection of the out-patient department and the emergency hospital in conection with the new general hospital.

The contract for the erection of the Moose Jaw Isolation Hospital has been awarded to Ellis Bros., at $11,350. Higgins & Moir got the contract for heating and plumbing at $2,600. Willoughby & Hay were awarded the contract for subfire station at $4.595.

McHardy & Co., Strathcona, were awarded the contract for the erection of a new fire hall there, at $16,680, with tower, or $14,980 without. Smith Freeze & Co. will do the plumbing at $1,540; and the Freeze Metal Co. supply sheet metal for $250.

The C. P. R. have awarded contracts for the completion of the new annex to their Windsor street station, Montreal. The contract for the building was awarded to C. E. Deakin at $1,000,000, and the contract for the structural steel work went to the Dominion Bridge Co., at $250,000.

General Building.

Dr. J. E. Taggart will build a $10,000 residence at Ottawa.

F. Morgan will erect a $25,000 business block at Vancouver.

The Vancouver Trust Co. will build a bank block at Vancouver, to cost $50,000.

J. D. McArthur has secured a permit for a warehouse at Winnipeg, to cost $51,000.

The G. T. P. will build a large modern hotel facing the Parliament Buildings at Victoria.

PLUMBING AND HEATING MARKETS

MONTREAL.

August 31.—The advance in the price of tin—there being a very strong squeeze going on in the primary markets—has caused a sharp advance in solder, local prices, both for half-and-half and wiping, going up 2c. Those who have been buying heavily recently have thus, for the time being, done a good stroke of work. No other important change is announced. All lines are firm.

Trade generally is very good. It is evenly distributed all over the country, so that there is pretty good evidence of the building boom being a substantial one. There is a very heavy call on soil pipe, while radiators and boilers are being shipped out as fast as they can be produced. Enamelware, too, is in remarkably good demand. Plumbers generally report trade good.

Soil Pipe—There is no let-up in the demand, and makers have the fear that a shortage may arise. At the present moment they find it extremely difficult to cope with the call, which is well distributed. The market is firm and unchanged, and we quote: Light, 60 off; heavy 70 and 10.

Lead Pipe—Good orders are coming in steadily for lead pipe. Some of the heavier users seem to be buying for stock purposes. The market is unchanged and we quote pipe and waste at 30 off, traps and bends, 50; calking lead, 5c per lb.

Solder—Owing to the higher prices obtaining for tin, the markets in London and New York heavily advancing, owing to speculation, prices of solder have advanced 2c. This will not, in all probability, check buying, as stocks in users' hands are not heavy, and the stuff is wanted. We now quote half-and-half 22c, and wiping 20½c.

Iron Pipe—Iron pipe, like all the other lines, is in very active call. The demand for iron pipe gets heavier every year. The market is unchanged, and we quote: ¼-in. black, 63; galvanized, 48; ⅜-in. black, 59; galvanized, 44; ½-in. black, 69; galvanized, 59; ⅜ to 4-in, black, 7[illegible] galvanized, 61½.

Radiators and Boilers—There is a very heavy call on radiators and boilers. Every order is of a rush description and as fast as the lines can be turned out delivery is taken. The market is firm, and we quote: Steam boilers, 60 and 5; round hot water boilers, 50 and 10; wall and hot water radiators, 50 and 7½; steam radiators, 50 and 7½ and 2½ per cent.

Scrap Metal—The buying continues [illegible] with a change in prices. We quote: Heavy copper wire, 11½c; light copper bottoms, 10c; heavy red brass, 10c; heavy yellow brass, 8c; light brass, [illegible]; heavy lead, 2¾c; scrap zinc, 3c; cast iron, $16.

Metals—Speculation in tin has continued in the primary markets, so local prices have advanced nearly 2c. We quote: Tin, 27c; copper, 13½c; imported lead, $3.75; domestic lead, $3.60.

TORONTO.

August 31.—Inquiry is particularly active just now, and country buying is improving. While there is no noticeable rush in trade all the manufacturers and jobbers report satisfactory trading.

Radiators and heating goods are selling well, makers stating that they are having difficulty in filling orders for immediate shipment, so great is the demand. Iron pipe, too, is brisk, especially in the smaller sizes for house work.

Solder prices are advancing. As yet quotations are up one cent only, but still higher figures are promised. The higher cost of tin is responsible for this. Stocks of tin are low and are held in few hands, hence the higher prices.

Enamelware—City demand is brisk, and country trade is opening well again. Northern Ontario points are getting in stocks before the close of navigation. All the supply houses report a large number of inquiries for baths, sinks and closet combinations for instalation in new residences. Quotations are unchanged.

Soil Pipe—Large stocks are in sight. Demand has been good for ordinary sizes, and is still fairly active. Light pipe is quoted at 60 and 10; medium and heavy at 70 and 10, and 7 and 8-inch sizes, 50 per cent. Fittings are unchanged at 70 and 10 off.

Iron Pipe and Fittings—Smaller sizes of pipe have the call still. Stocks are low in jobbers' hands. There were fine sales of smaller pipe lines during August. Prices hold unchanged. Discounts on malleable fittings range from 37½ to 40 per cent., with cast iron fittings from 60 to 65 off. Bushings, standard, are 70, and malleable are 65 per cent. Nipples are 75 and 10; headers, 60, and flanged and malleable-lipped unions, 65 per cent. Galvanized pipe is $6.35, and black pipe, $4.70 per hundred feet, 1-inch size.

Lead Pipe—Demand, though not great, is steady and satisfactory. Prices remain at 30 per cent. off. Traps and bends are quoted at 50 per cent.; calking lead is unchanged at 4½c per lb., and lead waste is at 9c a lb.

Solder—The high cost of tin has sent up prices a cent higher than last issue. The prospect is that solder will be advanced again shortly, as tin is still soaring in price. The various brands run from 18c to 19c for wiping, and 19½c to 20c for half-and-half. Supplies are plentiful and demand fair.

Brass Goods—Manufacturers report orders so plentiful that they have difficulty in getting deliveries out on time, although in many cases compelled to work overtime. The market is firm and demand steadily active. Prices are unchanged. Plumbers' brass goods are greatly wanted just now.

Boilers and Radiators—Discounts continue at 50 and 10 for hot water boilers and radiators, with 2½ more quoted off steam radiators. The feeling is much improved over the spring, when rumors of cutting hindered the placing of orders. Instalations are very much more active at present and are more frequently asked to be rushed. Manufacturers state that they are so busy with orders that they are having difficulty in getting shipments away on time.

WHAT ARE DART UNIONS?

Under the significant title "Dart Unions ; What They Are, and What They Do," the Dart Union Co., Toronto, have just issued a small eight-page booklet descriptive of these unions. They are said to be the first combination metal ground joint union made, and have proven successful since their use was adopted fifteen years ago. Their essential points are : an all-bronze ball joint ; heavy iron thread ends ; and neat finished castings and full threads. Dart unions are made in both screwed (or nut) and flange types, and may be used on steam, water, gas or air pipes. They are made to exact standards, the ball-shaped seats make a perfect joint either in or out of line ; the bronze face prevents corrosion and rust ; their heavy construction adds length of life ; and the Dart has all the advantages of the all-bronze union with the additional strength of iron ends. Dart unions claim the advantages of saving in upkeep cost ; elimination of trouble in making joints ; assurance of tight joints, allowing joints to be made innumerable times without expense ; and also allow the joints as well as the pipes to be covered. Every Dart union and flange is guaranteed. Several colored illustrations of both screwed and flanged unions give a good idea of what these goods are like.

The hardware and plumbing store of D. J. Wallace, Winnipeg, closed its doors on August 13, and fifty employes with their families and friends went for a gala day to Winnipeg beach. The day was particularly fine and a programme of sports was successfully run off, $500 worth of prizes being distributed. A special car was chartered for the crowd, which numbered about 150, and on each side of the car was hung a large white streamer bearing the words, "D. J. Wallace, Picnic."

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WOLFF AUTOMATIC SEAT-OPERATING SCHOOL CLOSETS are made of heavy vitreous china, which cannot craze and is non-absorbent. These closets are designed especially for use in schools, academies, orphan asylums, etc., although they are equally adapted for juvenile use in other public institutions or wherever high-grade modern plumbing fixtures are to be installed that are subjected to hard usage, where strength and durability must be considered. The seats are made of Extra Heavy Oak with galvanized cast-iron re-enforcing rings which ensure them against breaking.

ESTABLISHED 1855

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The only complete line made by any one firm.

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Soil Pipe and Fittings

ANTHES FOUNDRY LIMITED

Successors to

TORONTO FOUNDRY COMPANY, LIMITED

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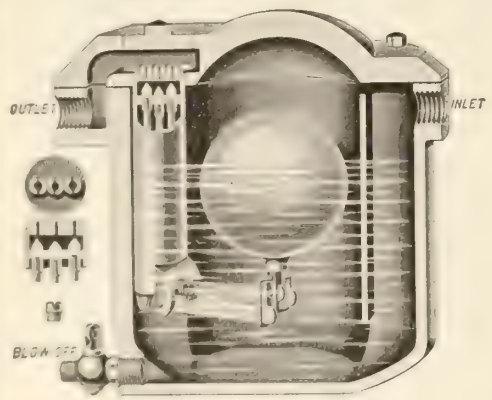
TORONTO



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STEAM TRAP

The "Emergency" trap drains the water from steam systems automatically and continually without steam waste and regardless of small flow or flood.

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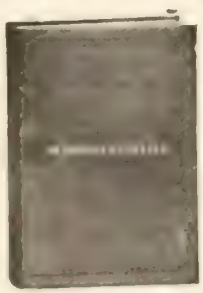

A useful handbook for Tinners and Sheet Metal Workers. It treats the simpler problems in pattern cutting occurring daily in the shop besides giving tables and information constantly needed by the mechanic.

Section 1—DIAGRAMS and PATTERNS. Demonstrates 50 examples of pattern work, such as cutting flared tinware, elbow patterns, etc.

Section 2—EPITOME OF MENSURATION. Describes how to find the area and circumference of a circle, contents of a sphere, etc.

Section 3—TABLES, RULES and RECIPES. Gives the weights of sheet metals, capacity of cans, recipes for mixing solders, cements, etc.

12 Pages *Price $1.* *53 Figures*

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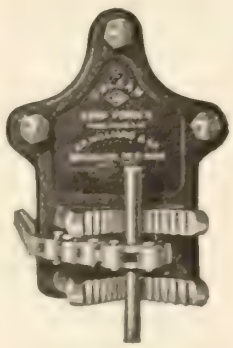

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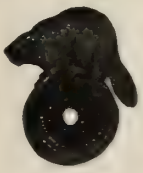

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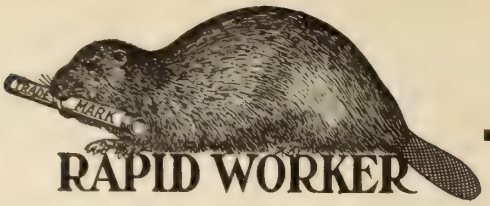

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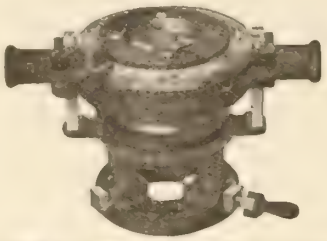
No loose Bushings or loose Dies on these two tools and they cut ⅛, ¼, ⅜, ½, ¾, 1, 1¼, 1½, 2 and 2½ inch pipes

No. 6 threading ⅛, ¼, ⅜, ½ inch, complete



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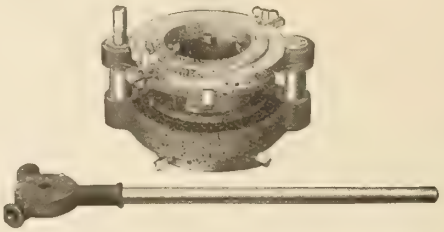
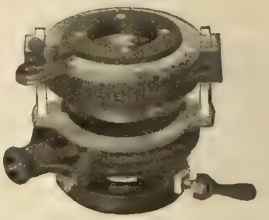
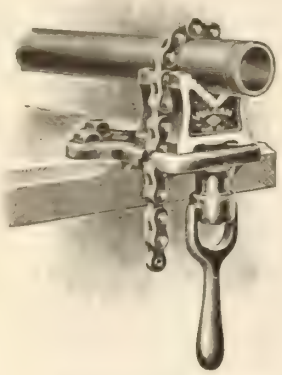
have cut the cost of pipe threading in two because they will thread all sizes of pipe without changing dies. They are built on the receding principle which positively enables one man to thread any size of pipe and produce absolutely tight joints for all work, including hot water. They save the time formerly used up in changing dies and looking after loose parts and eliminate all of thread-stripping when backing off.

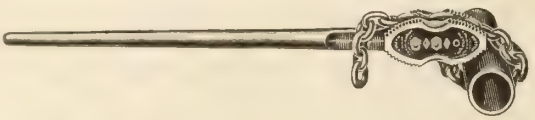


No. 60. Uses two sets of dies. One set cuts 2½, 3, 3½ in. the other cuts 4, 4½, 5, 6 in.; they are inserted without removing any parts.

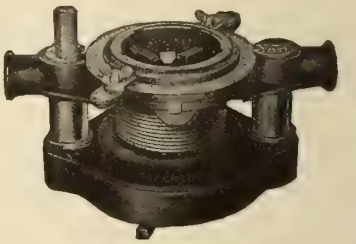


No. 26A. Cuts 1, 1¼, 1½ and 2 in. pipe. A boy can operate this tool.





Pipe Vise. Takes pipe ½ to 4 inch.



No. 41. Cuts 2½, 3, 3½ and 4 inch pipe.

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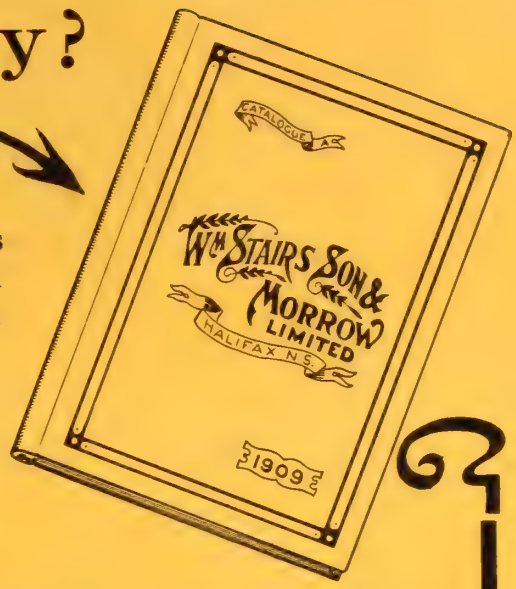

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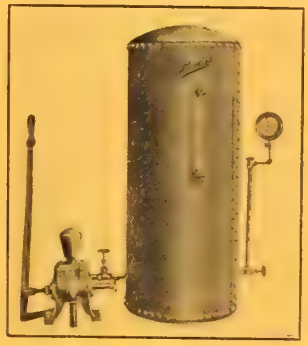

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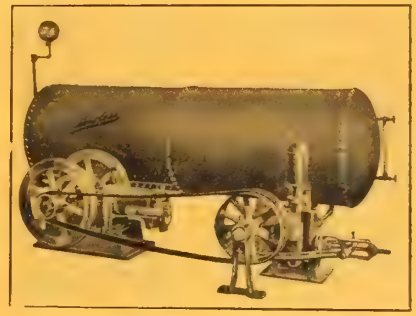

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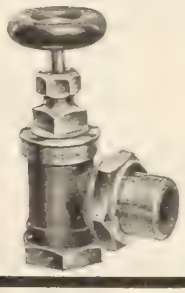

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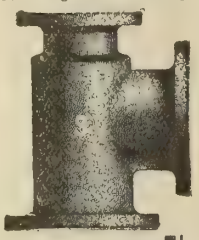

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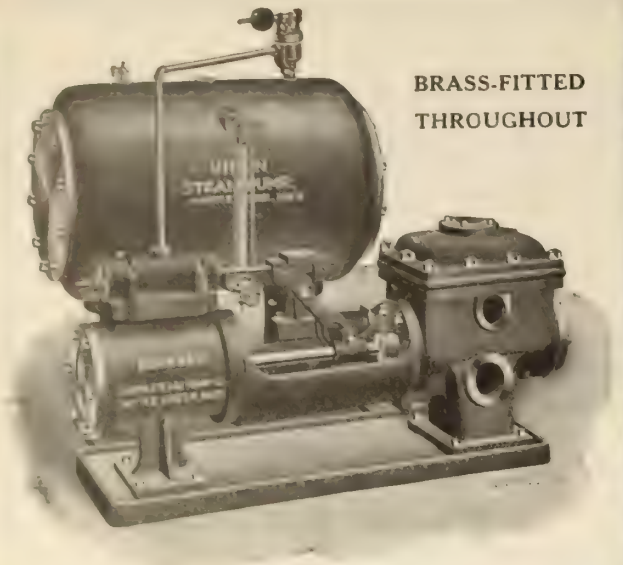

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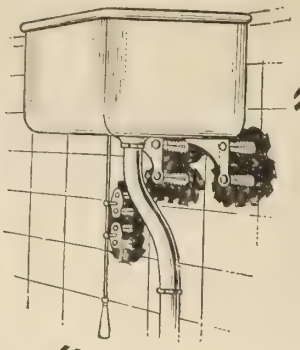

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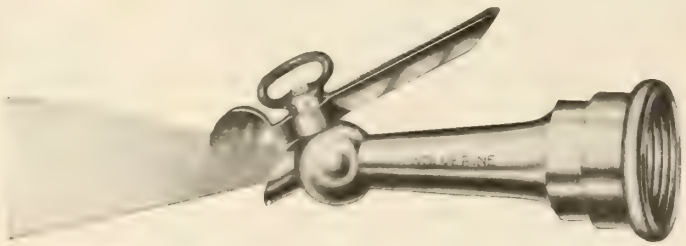

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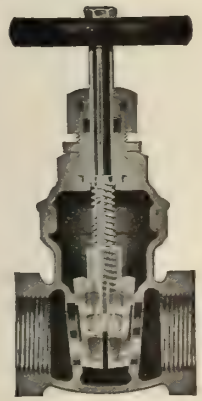

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TORONTO, SEPTEMBER 15, 1910

KEEP THE FLAG FLYING.

On no account should the enthusiasm shown at the convention in Toronto be allowed to cool off—for by enthusiasm alone can the good seeds sown during the meetings and the happy gatherings afterwards come to full growth. It is impossible to read the report of the proceedings in Toronto without feeling that substantial progress was made in association work, and that the way was cleared to wipe out many disabilities under which the plumbing industry now labors. But all this will avail little unless the good work is kept up.

Intermittent enthusiasm is of little count. For members of the association to wait until the eve of the next convention before they commence to talk reform again, is not only illogical, but a waste of many months of opportunity. Let each man set himself down to plan out ways and means whereby the good work of the Toronto Convention can be carried forward with ever developing strength, so that at the next meeting in the Twin Cities business will not be taken up at the point where it was left in Toronto, but at a very much more advanced state.

Just think of the encouragement it is to the officers of the National and Local Associations to feel that every member behind him is pushing forward the flag of reform; that day by day their official work is recognized by their fellow members; and that all are doing their best to be of assistance. We have only to instance the great fault expressed at the last convention that letters were unanswered to show the various ways in which the officers can be supported. It is easy to understand how disheartening, and how serious an obstacle to progress is this unbusinesslike habit of not answering letters. It is a serious matter when a secretary has to advise his successor to register every letter so that, reading between the lines, there shall be no excuse of the letter not being received.

With Ontario in good shape and other provinces all showing an awakened interest in the National and local association work, there could be no better time to buckle to, and work like trojans. Let there be no more of the old excuse for non-attendance at a meeting—"there is sure to be a good muster of the boys, so that I shall not be wanted to-night." If everyone said this where would be the meeting at all. Make the work of every local secretary a pleasure by attending promptly to his notices and packing every meeting. Grapple each question on the agenda thoroughly and thresh it out to a finish. Do not shirk trouble, and procrastinate, by leaving the matter over from time to time, or shovel it upon the shoulders of incoming officers. Get down to the work, and once taking a matter in hand, do not let up until some conclusion has been reached, and the matter settled so far as it is possible to go. It is very much better for the various associations to tackle one question alone, and to see it through, than to discuss many and settle none.

Only one thing is necessary to success, and that is enthusiasm. "Nothing great was ever achieved without enthusiasm," said Emerson, and these words should be seriously taken to heart by every plumber. The industry suffers from abuses and disabilities that are, to put it mildly, unjust. Custom and public ignorance, and to some extent indifference on the part of the plumbers, have made these evils tenacious and hard to remove. Protests here and there, half-hearted attempts to induce reform will not do much. But unity is a weapon which can accomplish everything that human power can do. Once master plumbers' join hands in a solid front, once enthusiasm carries them along, then those evils which now seem so hard to overcome will disappear as easily as a child cleans its slate.

TWO SIDES TO A QUESTION.

Exception has been taken by some of the supply men criticised in the editorial entitled "A Short-sighted Policy," in the Sept. 1 issue of The Plumber and Steamfitter.

They point out that their reason for not making an exhibit at the master plumbers convention, was that they had already arranged to make a display at the Canadian National Exhibition during the same week, and they further say that they showed their interest in the success of the convention by remitting in advance a contribution equal to the sum asked for the booths in the exhibition in the convention hall.

This explanation seems satisfactory so far as the firms in question are concerned, but The Plumber and Steamfitter was not dealing with individual cases in its criticism of the action of the supply houses. We took the position that it was a short-sighted policy for the supply houses to place any obstacles in the way of the master plumbers in their efforts to reorganize, more particularly as the supply men themselves have an association of their own. And we contend that the action of the supply houses in entering into an agreement not to exhibit, and having their secretary enter the exhibition hall and endeavor to order offending members to withdraw, did not have the appearance of enthusiastic support to the convention. Had the supply houses acted individually, rather than as a body, this criticism would not have been in order. The supply houses interviewed, however, state that they have never

declined to assist the masters on any matter in which they could legally co-operate with them.

That the Toronto convention committee endeavored to finance their own convention on a business basis is to be commended, but that they accepted cash contributions from firms, which declined to exhibit was a mistake, especially as this point was not made clear in the convention when the supply houses were criticised.

Another year it will be found to be the wisest course for the master plumbers to finance all their own convention expenses, even to the extent of assessing each delegate a certain sum for the entertainment features. If the supply houses voluntarily tender any social entertainment, however, it will be in order to accept in the spirit in which the offer is made as it is much better to work together harmoniously than work at cross purposes.

In the editorial referred to, reference was made to the difficulty of securing interviews with some plumbing supply houses, the word "some" being omitted by the printer. It was not our intention to make the reference so sweeping, as some of the plumbing supply houses and manufacturers selling goods to the plumbers and fitters in Canada have always been extremely courteous in their treatment of the representatives of The Plumber and Steamfitter.

OFFICIAL NEWS

N. A. M. P. & S. F. of CANADA

OFFICERS 1910-11

President — G. H. Cooper, Toronto.
Vice-president — J. E. Walsh, Montreal.
Treasurer — E. D. Higginbotham, Fort William.
Secretary — Lewis Legrow, 50½ Harbord St., Toronto.

Provincial Vice-presidents:—Nova Scotia, Frank Dexter, Truro; New Brunswick, G. E. Blake, St. John; Quebec, H. W. Munday, Montreal; Ontario, R. J. Shannon, Toronto; Manitoba, R. Thomson, Winnipeg; Saskatchewan, A. D. Henrich, Moose Jaw; Alberta, E. J. Young, Calgary; British Columbia, R. C. Hodgson, Vancouver.

Chairmen of Committees:—Legislative, H. A. Knox, Ottawa; Sanitary, Geo. Ross, Brockville; Apprenticeship, Jas. Griffin, Montreal; Essay, J. E. Farrell, North Bay.

Provincial Convention will be held at Toronto, Thanksgiving Day, Monday, October 31, 1910.

Next National Convention will be held at Port Arthur and Fort William about June 1, 1911.

CONVENTION ON THANKSGIVING DAY.

The Dominion Government have named Monday, October 31, as Thanksgiving Day so the committee in charge of the arrangements for the coming convention of Ontario Master Plumbers have another week than expected. The date is well chosen for the convention, and every town and city in Ontario should be represented at the meeting.

NEW OFFICERS ACCEPT DUTIES.

Lewis Legrow, the new secretary of the National Association has been busy on a moving job, but expects to take up the duties of his new office actively, as soon as he gets things settled.

The Plumber and Steamfitter, however, has been in communication with the new officers, and is able to present portraits of two who have accepted the responsibility placed upon them.

George Blake, of G. & E. Blake, St. John, N.B., had not heard of his appointment as vice-president for New Brunswick, and thought there must have been some mistake as he isn't even a member of the association, as yet. The Plumber and Steamfitter replied that there was no mistake about it, and the $3 annual fee to the National Association wasn't a big obstacle to overcome, so far as membership was concerned. Mr. Blake was elected, because he was known to be a successful master plumber, and a man of progressive ideas, and he should have no hesitation about accepting the honor tendered him, and undertake the duty of calling his fellow master plumbers together and urging upon them the urgency of organization.

A. D. Henrich, of L. B. Henrich & Co., Moose Jaw, writes, that while he has not yet received official notice of his appointment as vice-president for Saskatchewan, he had his attention drawn to a newspaper clipping announcing the fact by W. J. Meredith, former secretary

A. D. HENRICH, MOOSE JAW,

Elected Vice-President for Saskatchewan in the National Association of Master Plumbers.

of the National Association, and now traveling for the Monarch Brass Co. Mr. Henrich writes: "After I have received instructions regarding my duties I will endeavor to do my best to further the interest of the association."

The success of the Toronto convention should inspire Mr. Blake, Mr. Henrich, Mr. Thomson and Mr. Hodgson, the new officers who had responsibility thrust upon them unsolicited, to do their utmost to deserve the honor tendered them.

CONVENTION AFTERMATH.

Montreal delegates to the National Convention in Toronto, arrived home full of compliments concerning their treatment at the hands of the Toronto Committee, and very enthusiastic over the business done during the meetings. In their opinion the convention was the best ever, and should be the forerunner of a good many more of a similar kind.

The trade generally have read the proceedings in The Plumber and Steamfitter, with interest, and express the opinion that association work has received a great impetus from the success of the convention, while the various matters brought up, of great importance to the plumbing industry, were treated in a businesslike way that promises a near and happy solution if the work is carried on in the same manner. As one plumber put it: "The Toronto men seem to have done things splendidly, and set a pace that will mark a new era in the history of the National Association." The selection of officers, too, was generally approved.

The Plumbing Business

As long as the plumber clings to his traps, tubs, pipes and wrenches with a mind rising no higher than the mechanical details of his trade, he will be merely a "plumber." This series of articles will deal more particularly with the business end and readers should derive benefit from reading them.

Written for the Plumber and Steamfitter by Charles H. Denison.

CHAPTER IV.

The reason why prices are cut so freely in the plumbing and heating lines of business is that not one contractor in ten can tell how much he makes or looses on each job. Do you suppose, for one instant, that you would go on week in, week out, handing out money to somebody for nothing, if you were next? When the collection box is passed on Sunday in church no one notices a hefty amount thrown away.

There is a mighty easy way in which this price-cutting can be cured and it acts on each man in spite of himself. It is kind of a show-me and a self interest combination. It works as follows: when you make out an estimate on a job, take a second blank and keep tab on the cost as the work progresses. Take it item by item until the bitter (?) end is reached. Then foot up what the job really has cost and see how it compares with what you thought it was going to cost.

About three such doses will have a tendency to cure the most aggressive price cutter. If it don't he is beyond hope and should be allowed to bury himself. The man who has had small business experience, or the party who has just graduated from the tools may be disposed to "lump the job off," or get along with an indifferent estimate blank. The day has passed when a $400 job could be "lumped" for $900 as I have seen done. Any fool could keep in the swim at such prices. It may be said of the estimate sheet that it should contain all items going into the job.

Have Knowledge of Bookkeeping.

That means the profits and the running expenses also. You will not forget anything when you use these blanks and remember to try the experiment suggested above. Previously I have remarked that the man running the business should be able to keep a set of books. He won't have the time, but he should be "wise." Not long ago a certain firm sold out. They had employed a first-class bookkeeper for years and trusted that part of the business to him. This man was great on system. He had about every line of card index system, and references cross indexed, to beat the band.

When the boss asked to find out exactly where he was at do you suppose he could find out? Not on your life. It took an expert three weeks to put matters in shape so that the firm could sell out. This is a fact. Now if the master had looked after matters in the book-keeper's department he would have become disgusted with so much red tape and monkey work, and made a "cleaning." If he had known how to keep the books he would have cut out all the foolishness. Too much science is as bad as none at all.

If you desire to test this matter for yourself ask the book-keeper how you stand to-day; or this: "how much went out and how much came in last month?" That will be a fair test for both. If he (or she) can tell within a reasonable time all right; but if it is going to be a long, long job and the departments do not seem to show up clearly just where you are at, there is something wrong. There should be no doubt at all in the matter.

Double Entry System.

It is simply two streams of money, labor, material, etc., one is headed into the shop, the other is leaving the shop. No memory, slips, or memorandums will keep account of these two streams of commerce, and do it right. In keeping the books some prefer the single and others the double entry method. The double entry way is generally regarded as the safer and so I will say a few words about it right here.

It is not necessary to go to school in order to acquire the idea. You can, with perhaps a little showing, "catch on" for yourself. Some will not require even showing. The books necessary are the check book, the cash book, the sales book, the journal, the ledger, and the book for the trial balance. Those are sufficient to keep the business right, although some people add others for fancied convenience.

Many people do not use the check book properly. Number and fill out the whole page in full, You will then have a record on the stubs. In the cash book you will of course keep track of the cash dealings. On the sales book will be found the record of the sales. In the journal keep track of matters which are not sales or pertaining to the cash.

The ledger may be described as the bunched record of the whole business, with the trial balance for a detective. With the addition of some time and material slips you are in a fair way to keep track of the business.

Make yourself able, at least, to attend to these matters, if it is necessary and do not feel at any time obliged to depend absolutely, upon another persons figures.

Our graduated journeyman will, by this time, be up to his neck in experience and, perhaps, getting an education free of all charges. Let us hope that he has had the sense to prepare himself in advance. Speaking of education I want to turn loose a bit and here is a good place. It seems to have become the fashion to assume that a person does not have a so called education unless he (or she) has been through a full and complete course in the schools and colleges. That is merely "book learning."

Common Sense Necessary.

There are plenty of wise professors who do not possess as much true education as a news boy upon the street. A true education is something that gives us the proper hold on life in a manner that will enable us to make the best of ourselves and also of our opportunities. This may mean many, or few books, according to the place we desire to fill. It also means modern books that are in touch with the spirit of the times and not the fossalized wisdom of out of date ages.

How is a person to get this education do you ask? Why by developing the common sense. It is not what some one tells you, it is what you dig out for yourself that you remember best and that assists you to grow; many people have spent thousands of dollars in cramming the mind with facts found in books and ended up by becoming an educated fool, a case of three story

training on a one story man, as some one has well said.

It must not be inferred that I am against true education. I do, however, object to the foolish waste of time spent in acquiring a lot of well worn stock information years behind the times and of loading up the brain with stuff that will never be used in the fight of life.

Some of the things one can do to acquire this true education are to pay attention to the rush of events; to observe the conduct of men who are successful, to travel, when possible, and to read the magazines and the newspapers. The foregoing will wake up the mind and many other things will suggest themselves as time passes.

Plan Ahead for Years.

If the journeyman ever hopes to become a successful master he can begin this course of self help years before the event takes place. If, however, he steps over the line which divides the business from the trade with merely a trade amount of wisdom, he will find that he is most heavily handicapped. With the business that he must dig up in order to keep things moving and the knowledge that he will be forced to gain to exist he will be crowded to the breaking point.

Hence the time and place for would be masters to get in the game, is apparently while they are out of it, which seems to be a contradiction. The wise man in any event which is to take place prepares himself before hand, while the unwary one will step in unprepared and get stung for his lack of foresight. So while passing the days in handling the tools, try and acquire a general look into the conditions of affairs and men and develop as speedily as may be that bump called common sense, endeavoring to prepare yourself in advance for the station which you hope to assume later in life. This preparation you will find to be the best and wisest investment of time, trouble and money that you ever made.

PUBLIC CONVENIENCES.

The question of public conveniences of various kinds is agitating a number of Canadian municipalities, though not before the time was ripe.

Public lavatories is an issue at present in St. John, N.B., and of late has caused much discussion. So much so that the city council has decided to instal a public comfort station in Market Square. That body has also issued an order to have the present public lavatory in the market building open day and night. Plans for the new station will be called for immediately.

At Victoria a number of by-laws are to be submitted to the rate-payers for their sanction in the near future. Of these, one is to raise $20,000 for the erection of public conveniences at the Causeway.

There are a number of other centres in the Dominion where similar works might profitably be discussed.

Toronto's latest comfort station at Broadview Avenue and Queen Street is being pushed forward again, though sufficient time has elapsed since it was begun to build two such structures. That city has now about a dozen sanitary drinking fountains in its parks. A few days ago the Board of Control voted $100 for another sanitary fountain to be placed in Leslie Park.

DIRT IN WATER PIPES.

The presence of sand, dirt or plaster in water pipes is often the cause of the manufacturer of brass goods being heaped with abuse for making and shipping supposedly imperfect goods.

Unless care is taken in the handling of pipes before being installed it is a very easy matter for them to become clogged with sand, dirt or plaster, and the presence of any one of these substances will not be detected until the job is finished and the water turned on. Then, unless too tightly clogged, the pressure will wash whatever substance may be in the pipes through at least to the nearest outlet, and then is when the trouble is most likely to develop.

If all of the foreign substance is not carried through the faucet or valve it will gather in the valve seat and either grind it or keep it from closing perfectly. The leak which results is then blamed on to imperfect goods, and, if a complaint does not get back to the manufacturer, the purchaser or owner is at least warned not to use the same make of goods in the future and the manufacturer loses the prospect of future sales.

A little care is all that is necessary to obviate such troubles. Have your man handle the pipes in sucn a way as to keep any foreign substance from getting in them. Before you install a piece of pipe see if the inside is clean.

When the job has been roughed-in and you are waiting for the plasterer or tile setter to do his part before you can finish, plug or cap all open ends to keep plaster or cement from entering.

Precautions of this kind take far less time than it does to remove anything that may be discovered in the pipes after they are in place, and at the same time you will have less complaints with brass goods.—Modern Sanitation.

SEWAGE DISPOSAL IDEAS.

The ideal site for sewage works is one which is sufficiently far removed from dwellings to prevent any possibility of nuisance arising, and it should be at such a level that the sewage can reach it by gravitation, writes C. W. Easdale. Where this is not possible, only that portion of the sewage should be pumped which will not gravitate. The sub-soil of the site should be suitable for the final process after treatment in tanks and filters.

In selecting the system of treatment, the chief factors to be considered are the character of the sewage to be treated, the extent to which it must be purified, and the fall available at the works. The ideal grit chamber is one that will arrest all the mineral matters in the sewage but none of the organic matter, and it should have special facilities for the removal of the deposit. Screens, if used, must be designed in such a way that they will arrest the matters they are required to intercept but allow all others to pass, and not readily become choked.

There are so many types of tanks that it is extremely difficult to choose the most suitable type. The question is raised as to whether it is essential to have septic action as a preliminary process in all cases. The ideal method is such that it is adapted to the particular character of the sewage to be dealt with, and will produce the most suitable effluent for the filters, while at the same time reducing the quantity of sludge to the minimum, and preventing the possibility of nuisance from smell. In the construction of tanks, attention must be given to the rate of flow through them, and special care must be devoted to the provision of every facility for the removal of sludge.

In the design of contact beds the ideals to be attained are to make them absolutely water tight, to provide a self-cleansing gradient on the floors, and a false bottom over the whole area, and also to select the best material and see that it is properly graded. Another important point is to arrange them so that they can be operated in the proper manner.

With regard to the percolating filters, the ideals as to floors, false bottoms, and material laid down for contact beds, apply with equal force. The question of distribution is of prime importance, and the author considers that continuous distribution, where possible, is more efficient than intermittent. Humus settling tanks or fine grain filters are necessary in order to produce the ideal final effluent.

From the general constructional point of view the ideal works should be executed in such a manner that while they are constructed throughout in a substantial manner and of materials which are the best of their kind, they should contain nothing which has not a direct bearing upon their efficiency in the production of a satisfactory effluent, and their maintenance in a good condition at the least possible outlay for repairs.

The Question Box

Subscribers are Urged to Send Questions to be Answered, or to Comment on Letters Published. Descriptions of Jobs Done or Shop Kinks are Also Invited.

RADIATORS SET PER DAY.

Editor Plumber and Steamfitter,—I see in one of the former issues of your valuable paper the statement that a man should be able to set from two to four radiators per day. Let me say that under good circumstances a good steamfitter should set some six steam radiators in a day and work only eight hours at that. It all depends upon the amount of headwork that the man will put forth. Of course if it's a case of all bulk and no head, the work will hang fire. If, however, he will make use of the usual normal sense which has been given to him, coupled with an ordinary amount of practical experience, he will, generally, find no difficulty in accomplishing this matter.

Toronto, Sept. 14. "Experience."

USING TEMPORARY PIPE HANGERS.

Editor Plumber and Steamfitter,—Will you kindly tell me if there is any advantage in the use of temporary pipe hangers? I have seen the thing practiced a good deal in some places and I can not figure the thing out as a good practice in any manner.

Sherbrooke, Sept. 8. "Fitter."

Under some circumstances, such as the non-arrival of goods, it may be necessary to make use of this practice. Under all other conditions we should say to avoid it as far as possible as it is a waste of time and also the pipes are not as secure as in the hangers that should ordinarily be provided. It is just as easy to put up the proper hangers in the first place as it is to wait until later and the time lost in putting up the false hangers and of taking them down is a total loss. —D. C. H.

WHAT CAN A MAN EARN?

Editor Plumber and Steamfitter,—I should like to ask you if you have any points on the amount of wages that a good journeyman should get? I know that there is a great difference in this respect and I would like some pointers on the matter.

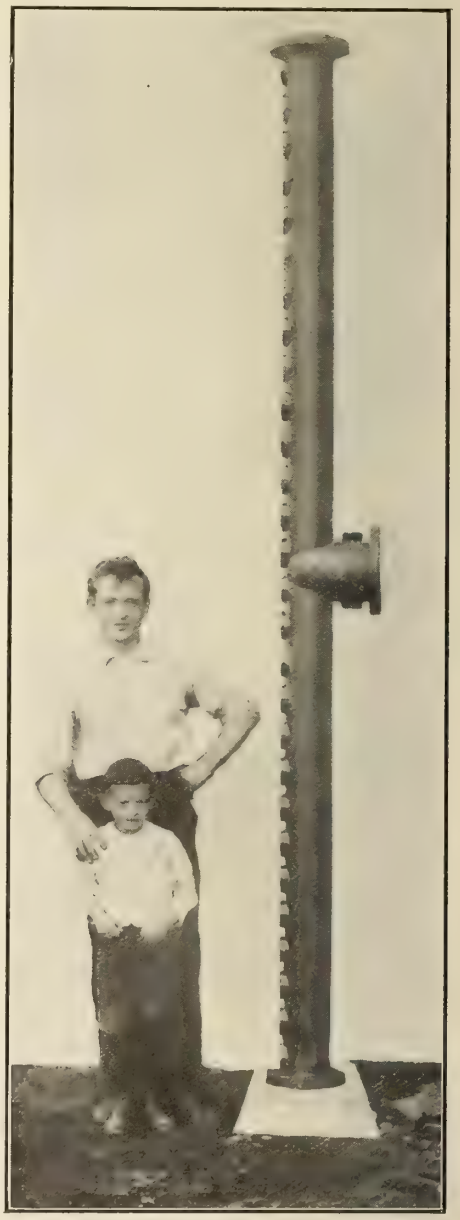
Galt, Sept. 12. "Apprentice."

We would state that the scale differs in this country from 30 cents for 9 hours in some places in the eastern part, to 62½ cents per hour for 8 hours in the western parts. We might make a statement that there are a very few masters in the business who will pay to a man all that he is worth. If you can put in the work so as to make money for the boss, he will (in exceptional cases) be willing to pay more than the scale, whatever it may be. It works out in this business just the same as in any other line, a good man is worth his price, whatever it may be. So we would advise you, Mr. Apprentice, to get busy and acquire all the facts and wisdom that you can possibly absorb. Make yourself of such account that the boss will feel that he cannot possibly get along without you and we believe that the matter of wages will entirely take care of themselves. If we are in any ways wrong in these statements, or if their is any correction to be made in what we have stated, we should be very glad to publish the letter. Speaking somewhat to the mark we believe that $2.70 a day is pretty small wages for a mechanic to get in this business and we believe that, if we were up to the average, that we would not draw such wages only long enough to get the money with which to leave such a town. When the cutting and competition have forced matters to such a pass it is time for the good mechanic to dig out and leave the masters to fight it out between themselves to the bitter end. That won't set very well in certain quarters, but when the facts are told, it leaves nothing to be explained away.—D. C. H.

CANADIAN MANUFACTURERS PROGRESSING.

Editor Plumber and Steamfitter,—The accompanying picture shows one of eighteen steam headers made for us by the Standard Fitting and Valve Co., Guelph, the eighteen being used on a new refrigerating plant installed at the Steel Company of Canada's works, at Hamilton. It is over ten feet over all, with 28 outlets tapped for two-inch pipe and has a six-inch flanged centre back feed. It shows that our Canadian manufacturers are awake to the growth of the steamfitting trade in this country, especially in the larger fittings, which have heretofore been imported from the United States. We hope in the near future to be able to have all of our fittings used in the Dominion, made at home.

Toronto, Sept. 2. William Mansell.



Largest Made in Canada Header.

One of eighteen installed by Purdy-Mansell, Limited, Toronto, in a Refrigerating Plant at Hamilton.

COMMENTS ASKED FOR.

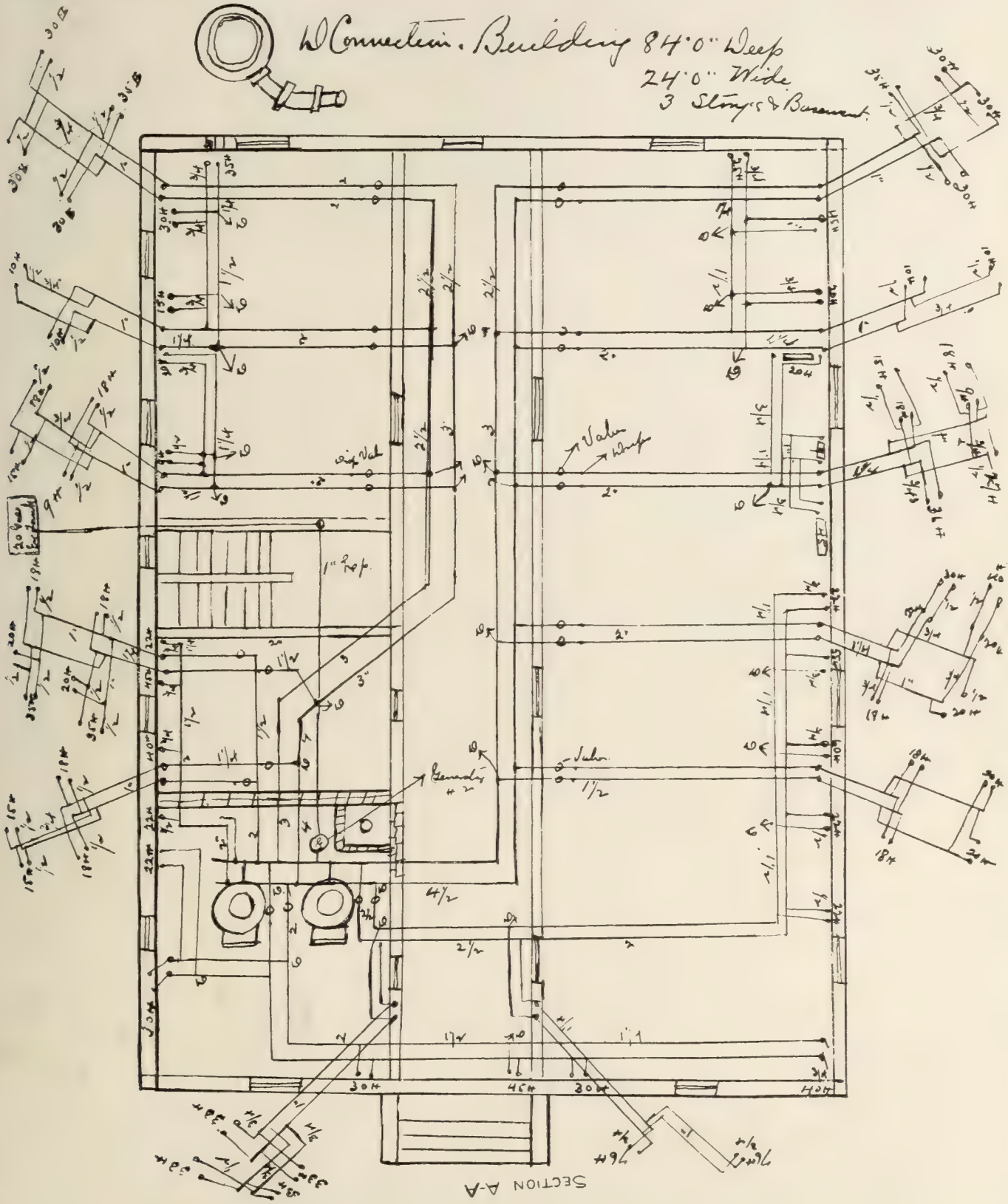
Editor Plumber and Steamfitter.—I send herewith sketch of a system with a No. 2 Honeywell Generator installed in an apartment house in Ottawa, which gave entire satisfaction last winter. This sketch may be of interest to those not yet familiar with this system.

Two Oxford Rd. Boilers, 8e and 6B were installed, carrying 1,954 feet of wall radiation, exclusive of main, which are all covered. On account of the small sizes of mains and return risers, the connections of radiating surfaces being ½-inch for second floor and ¾-inch for first and ground floors, the branch in basement from main floors and returns, for said risers, are made in such a way, out of the ordinary connection that one would be in doubt of proper circulation.

As it is impossible to show the way connections are made on sketch, they are marked "D" and shown on side of sketch.

I would like comment from readers on this installation for or against the system. J.I.C.

Ottawa, August 24.



Sketch of Heating System Fitted With Honeywell Generator.

A View of the Grounds of The Canadian National Exhibition When the Crowd Was Large.

Canada's Great Exhibition is Climbing Upwards

An Increase in Numbers of Almost 100,000 People in Spite of Some Extremely Bad Weather—World's Fair Suggested for 1914 to Celebrate Peace Centenary—A Truly National Exhibition—Many Fine Exhibits of Special Concern to the Retail Dealer—West India Products Displayed.

Toronto, Sept. 15.—Canada's National Exhibition this year triumphed over many obstacles and achieved another distinct success, despite the unusual incident of adverse weather conditions.

This is evidenced by the fact that the total attendance was 837,000, about 85,000 in excess of 1909 and almost 200,000 in excess of 1908. This is a phenomenal increase in view of the disappointment of Labor Day when excessive rain kept the attendance 54,000 below that of Labor Day alone last year. The surplus is estimated at $45,000, so that there can be no question of the greatness of this greatest of continental annual events.

The Peace Centenary.

There is considerable stir just now over the proposal to celebrate in 1914, in Toronto, the hundred years of peace between Great Britain and Canada on the one hand and United States on the other, and it is suggested that the grounds and buildings of the Canadian National Exhibition be utilized as the site for a World's Fair under the supervision of an International Commission representing the countries named.

It is claimed that from an historical standpoint the suggestion is a good one. For it was on the grounds on which the National Exhibition is annually held that one of the bloodiest engagements of the war of 1812-14 was fought. At the close of that struggle the capital of Upper Canada fell into the enemy's hands, and its public buildings were burned, an act that led to the historic justice meted out in the burning of the public buildings at Washington by a British squadron. The mingled dust of British soldiers, United Empire Loyalists, and stout New England Republicans who fell at the battle of York rests to this day beneath the soil over which every year hundreds of thousands of pleasure-seekers walk unheeding. It is therefore sacred soil fit to teach the highest lessons of patriotism to those who may attend the Fair of a Century of Peace.

Whether this comes to pass or not the Canadian National Exhibition will go down through the annals of history as one of the greatest, if not eventually the greatest of similar annual fairs in the whole world.

That it is National is proven by the interest the other provinces of the Dominion take in it. We have British Columbia in the far west proudly showing the products of her soil. Her fruits are among the finest the world produces and they were admirably displayed. Alberta, Saskatchewan and Manitoba—the vast prairie lands of the west—are now being looked up to as among the greatest of the world's wheat producing districts, while only a few years ago that earth resounded with the tramp of the majestic buffalo. They were represented at the Exhibition with their "No. 1 Hard Wheat" and other examples of western progressiveness.

The products of Ontario's fields, orchards and vegetable gardens were displayed in commanding manner while Canada's mines showed forth their greatness. Quebec and the Provinces-down-by-the-Sea sent their quotas of exhibits and people and all have reason to feel elated at the culmination of this great event.

Demonstrations Were Popular.

The stove section has been materially enlarged and now takes up most of the space of the two northerly divisions of the Industrial Building, exhibits of metals and cooking utensils being grouped together near the stoves.

One of the most important lessons for master plumbers to study at the Exhibition were the methods used by exhibitors to display and demonstrate their goods. It was interesting to watch the salesmen in the stove exhibits, for instance, and study their approach to a customer, their drawing out of what the visitor needed, their method of showing the points of the range and closing a sale. Some of the Toronto agents for several of the stove manufacturers were particularly successful in making sales as a result of their work at the stove displays.

A demonstration of fireless cookers was the centre of a crowd at all times, while in another booth across the aisle the same cooker was displayed and attracted little attention. Not long ago the only manufacturer of fireless cookers in Canada stated that he had only sold 100 fireless cookers in this country in a year's campaign. Yet the salesmen who assisted the demonstrator referred to sold 22 of the cookers in the two weeks at the Exhibition.

In the Industrial Building the various plumbing displays were centered, the Standard Ideal Company, James Morrison Brass Manufacturing Company, James Robertson Company, Amherst Foundry Co., Standard Sanitary Manufacturing Co., Doulton's Limited, and Keith & Fitzsimmons, Toronto, all having displays. The demonstration of the Peerless Heater in the James Robertson Company's exhibit was as much an object lesson to master plumbers as the various demonstrations of stoves, paints, etc., were to hardware merchants.

"J.M.T." BRASS GOODS.

Lighting fixtures were the chief feature of the exhibit of the James Morrison Brass Mfg. Co., Toronto, in the Industrial Building this year, though plumbing goods and engineers' brass work was also prominently displayed. Last year's change from Machinery Hall to the Industrial Building having proven very satisfactory, the same booth was used this year as in 1909, it being one of the most prominent corners in the very centre of the Industrial Building, midway between the Stove and Process sections.

The number of plumbing fixtures shown was not as large as a year ago but their prominent position brought this branch of the Morrison business to the front and impressed upon hardwaremen and plumbers who visited the display that both in enamelware and brass goods for plumbers the Morrisons are in the front rank. Several types of lavatories were shown along the wall with beveled plate glass mirrors, shelves and bathroom fittings hanging above. And in a prominent position in the foreground a large silent salesman was used to display an elaborate line of plumbers' brass goods in both brass and nickeled finishes. Included in the case were bath fittings, stop and waste cocks, fuller and compression work, valves, and other fittings required for plumbing work and water services.

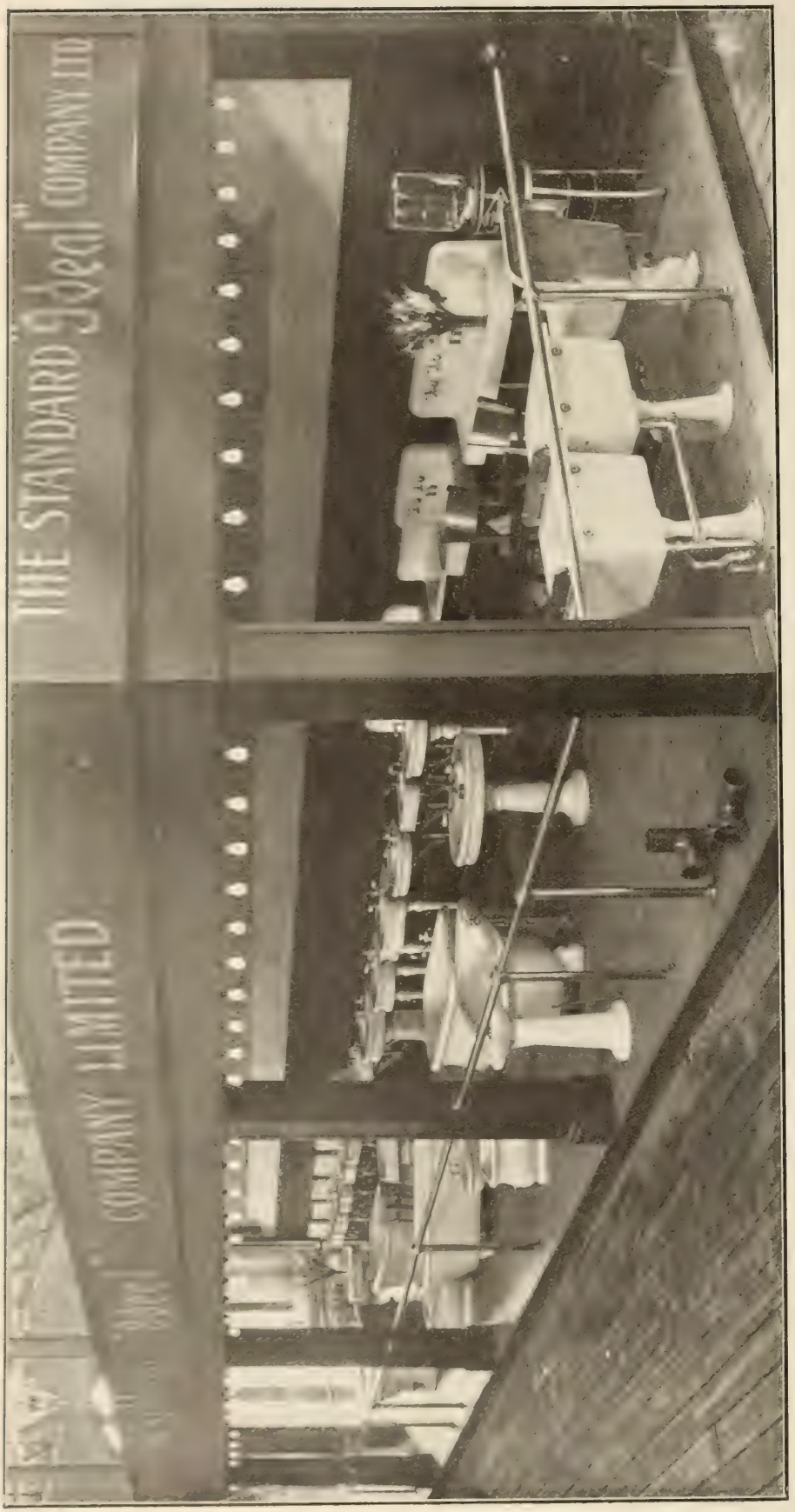
Hanging from the ceiling and wall and resting on tables and desks were dozens of handsome electric lamps and lighting fixtures, there being some particularly beautiful domes for dining rooms and dens, and clusters of lights for halls, drawing and living rooms. Some very artistic wall brackets were shown. The brass work on all was of the highest class, brass chains being favored for the hanging fixtures. The finishes were of many styles as in addition to the usual polished brass, black iron, brush brass and lemon brass, fixtures were shown in oxidized brass, oxidized copper, antique brass, polished nickel, gun metal, bronze metal, oxidized silver and verde antique (green). Innumerable styles and designs of shades were used to complete the fixtures, the artistic construction of some of the shades bringing forth expressions of admiration from many who were looking for "classy" lighting fixtures.

An electric grate, finished in light hammered brass, combined both artistic and utilitarian qualities, and was also the subject of much favorable comment.

In engineers' brass work the Morrison display was even more complete than in former years, the display being shown off to splendid advantage by the dark background. Marine brass work is a specialty of the James Morrison Brass Mfg. Co. and the equipment they make includes everything for both pilot house and engine room brass work. Steam gauges, steering wheels, motor boat, engine and locomotive mountings, Hancock inspirators, J. M. T. Valves, locomotive injectors, oil cups, whistles, fire nozzles and hose couplings, were a few of the articles shown.

S. H. Hadley, A. Betton and James Fiddes, salesmen in Western Ontario, Eastern Ontario and Toronto, were in charge of the exhibit.

CANADIAN NATIONAL EXHIBITION.—Brilliant Display of Lighting Fixtures by the James Morrison Brass Mfg. Co.



CANADIAN NATIONAL EXHIBITION.—Magnificent Display of Enamelware Made by Standard Ideal Company.

BATH ROOM EQUIPMENT.

The large permanent stand of the Standard Ideal Mfg. Co., Port Hope and Toronto, in the Industrial Building, was one of the centres of attraction for the scores of master plumbers who attended the Toronto Exhibition this year, and many of the delegates to the Master Plumbers' Convention, made the exhibit their headquarters when at the grounds.

Some of the delegates, too, placed good orders for Standard Ideal products when here, being attracted by the excellence of the articles shown. One of the fine new Alexandra ware baths, for instance, was purchased by E. J. Young, of Calgary, for the display room in the fine new building nearing completion for the E. J. Plumbing Co., Limited.

From the experience of those in charge of the display it is certain that the display of the fine line of goods manufactured by the Standard Ideal Co. is of benefit to master plumbers. Intending builders see and take a liking to fixtures which they would not otherwise know about, with the consequent result that when the plumbing contract is let it includes specifications for a higher quality of fixtures which, of course, carry a higher percentage of profit for the plumber than the ordinary fixtures would.

As in last year's display the central feature of the display was the "Alexandra" line of high-grade porcelain enamelware, about a score of "Alexandra" baths, lavatories and other fixtures being shown. Included in these were many new designs and improvements, the most important of these being a double basin lavatory specially constructed for club house use or for where both hard and soft water is used.

Also included in the "Alexandra" display were such fixtures as water closets, sitz baths with bidet attachments, pedestal child's baths, manicure and dressing tables, several of the baths being hand decorated.

In design the "Alexandra" fixtures would pass anywhere for solid porcelain but they are in reality of greater serviceability and command a higher price than solid porcelain ware. It has taken an enormous investment to prepare the drawings and master patterns for "Alexandra" ware and some of the fixtures have required an investment of thousands of dollars before a single article was manufactured. It has been their aim, however, to produce on Canadian soil the highest quality of bathroom equipment known, so that it will be unnecessary to import from foreign countries, and their exhibit proves that they have succeeded and are now able to supply the demand for both high-class and reasonably priced fixtures.

A wide variety of lavatories, bubble fountains, kitchen and slop sinks, drain boards, laundry tubs, etc., completed the display, while samples of the "Impermeable" enameled soil pipe were shown along with samples of the company's ordinary soil pipe.

Wm. Linton, Ontario salesman, was in charge of the booth, but H. T. Bush, general manager of the company, Port Hope, and A. D. McArthur, Ontario sales manager, spent considerable time at the exhibit renewing friendships with customers.

METALS FOR PLUMBERS

A nine-foot high man, with curly hair, moustache, collar, cuffs and buttons—all quite natural but made of sheet metal was the first object to attract the attention of the visitor entering Machinery Hall. With arm outstretched it pointed to the exhibit of the Canada Metal Co., where were displayed samples of metals used by manufacturers of almost everything under the sun. W. G. Harris, Sr., general manager of the company, was in personal charge of the display.

For the plumbing trade there was shown lead pipe, lead waste, hydraulic drawn, non-syphon and centrifugal cast traps, brass ferrules, tinned, iron and lead combination ferrules and bends sheet lead, lead fibre and solder. A large revolving table showed up these and a number of other metal products of the company.

The Canada Metal Co. are making a specialty of solder, and are putting it out in several grades—Star Extra Wiping, which lays claim to being the highest grade made in Canada; Easy Wiping and Acme Wiping Solder. The plumber can always find sufficient lead with which to coarsen his solder, but he finds it impossible to find and mix tin when he wants to make his solder fine. The by-word on Extra Star Solder is "the solder with the tin." The plumber who wants the best solder should ask for "Extra Star."

Mr. W. G. Harris.

There are some plumbers who prefer the "Easy" wiping solder. This is not made with the point in view of cheapness, but there are some who find the "Star" too fine for their work. For these plumbers the "Easy" is made. It wipes a first-class quick joint and one that will not sweat. The price is low, but the quality high. Then there is the "Acme," used by many plumbers throughout Canada.

One of the secrets of success of the company in the manufacture of solder and generally in their whole metal business is the fact that they run their own chemical laboratory with competent chemists and metallurgists at the head of same. By confining themselves to research and analytical work all their metal products are the result of the most complete, careful and up-to-date methods. An electrical apparatus is used for the various determinations in this department.

In lead pipe the company makes sizes from 1-16 inch up to 12 inches. There is no pipe inside those sizes which the Canada Metal Co. is unable to supply either in lead or pure block tin.

Several brands of half-and-half solder are made for tinsmiths, also lead washers; and a number of brass foundry lines were shown—the company at present pushing brass foundry work. The Canada Metal Co. is now running two factories in Toronto—William Street (head office) and the Fraser Avenue works.

CANADIAN NATIONAL EXHIBITION.—Where the Canada Metal Co. Showed "Everything in Metals."

CANADIAN NATIONAL EXHIBITION.—James Robertson Co.'s Paint and Metal Display.

ROBERTSON'S PLUMBING SUPPLIES.

As in former years the James Robertson Co., Toronto, again had a fine display of plumbing supplies, metals and ready-mixed paints.

The plumbing goods display was very artistically arranged, a special feature being made of a magnificent marble shower bath, probably the finest specimen of work of this kind yet shown in Canada. In addition to this there were handsome nickeled brass and wall shower baths, enameled bathtubs, sitz baths, marble and enameled lavatories, various types of water closets, medicine wall cabinets, plate glass mirrors, and a very complete line of bathroom fittings.

A "Peerless' kitchen boiler and heater were demonstrated in a practical manner by being fitted up to gas and water pipes, and visitors had an opportunity of seeing for themselves the great advantages the "Peerless" has over other domestic water heaters, a supply of hot water being always available by merely keeping the pilot light lit, while a supply of cold water could be made hot in only two minutes.

A minature bathroom constructed of marble walls and fitted up with a minature bath, sitz bath, lavatory, closet and shower, all supplied with brass fittings, and the shower in operation with a celluloid doll receiving a shower bath.

CANADIAN NATIONAL EXHIBITION.—James Roberson Co.'s Display of Ba throom Equipment.

Demonstrating Sample Boards for Plumbers' Tools

Novel Motion Board Idea Adopted by American Manufacturers for Showing Actual Working of Tools Made by Their Company—Used at Trade Conventions and for Window and Store Display—New Ratchetless-Ratchet Wrench.

J. H. Williams & Co., Brooklyn, N.Y., makers of wrenches, pipe vises, drop-forgings, etc., have devised a set of "motion boards," which graphically and effectively show a number of their tools in action. They were designed specially for display at trade conventions and exhibitions for practical demonstration purposes, and to show plumbers, heating engineers, merchants and tradesmen the actual capabilities of the tools.

The company found it difficult to adequately show in literature the principal features of their tools, hence the adoption of these "motion boards." So successful have they proved themselves at various conventions that it has been decided to loan them to plumbers and heating engineers and others for display in their stores and windows. Motors of ⅛ h.p. are used for propelling the mechanism.

On this page are two illustrations showing the front and back arrangement of tools, pulleys and belts. No. 1 illustrates a sample board containing a varied assortment of articles, most of them rigid. The moving feature shows two one-piece wrenches made on the same principle as a track wrench. The back of the board shows the mode of operation. The looped belt on the lower line of pulleys is simply the additional belt required for connecting the board with the motor.

Illustration No. 2 shows a similar board containing a Vulcan-Bijaw drop-forged chain pipe wrench, with double-ended reversible jaws, supplied with either cable or flat-link chains; and the Vulcan patented drop-forged chain pipe vise, the latter holding a section of pipe for the practical demonstration of the wrench. A jointed substitute for a human arm is made to work the wrench as in actual use, while the mechanism at the back simultaneously revolves the pointer which calls attention to the two sets of jaws. These two sets of jaws practically double the life of the Bijaw wrench. It might be mentioned that the movement is so regulated that the pointer stops long enough at the upper reading matter to permit individuals to scan it; the pointer than makes a half revolution, and in similar manner points to the lower sign.

J. H. Williams & Co. have also recently patented the "Williams' Ratchetless-Ratchet Rench," which acts like a ratchet wrench, but contains no ratchet mechanism. One of the accompanying illustrations shows the general appearance of a double-ended wrench of this type, and the other a diagram of its action in use. When pressure is exerted on the handle of a wrench there are only two points of contact between the nut and the jaws; these are at the outer end or point of the advancing jaw and the heel of the following jaw. Obviously the point of the latter can be cut away without destroying the effectiveness of the wrench. It still can be used in either direction, but must be turned over for opposite rotation. The advantage of the modification comes in when the wrench is on its idle stroke, for, instead of retracting it from the flats of the nut after the manner of an ordinary solid wrench, the handle is simply swung back as with a ratchet wrench, and the short jaw rolls on the flat with which it is in contact, releasing the other jaw from the opposite flat. Further movement of the handle attended with slight pressuee toward the nut allows the short jaw to slide as soon as the nick at its base is free. When the long jaw comes in contact with the next flat of the nut the short jaw hooks the corner diametrically opposite the one in contact with the point of the long jaw and a reverse rotation of the handle causes the nut to turn.

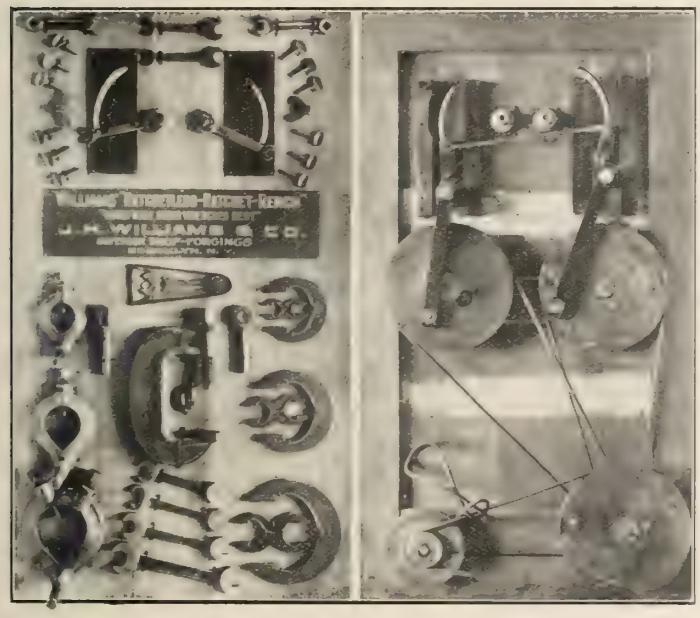


Fig. 1.—Front and Back of Display Sample Board, showing two Ratchet One-piece Engineers' Wrenches Tightening a Square and Hexagon Nut.

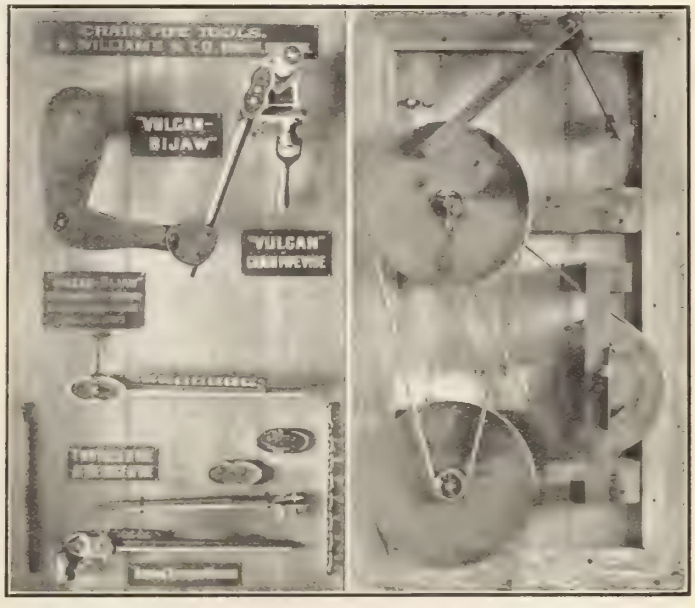


Fig. 2.—Demonstration Covering the Vulcan-Bijaw Chain Pipe Wrench and Vulcan Chain Pipe Vise.

Solid Ratchetless-Ratchet Rench, made by J. H. Williams & Co., Brooklyn, N. Y.

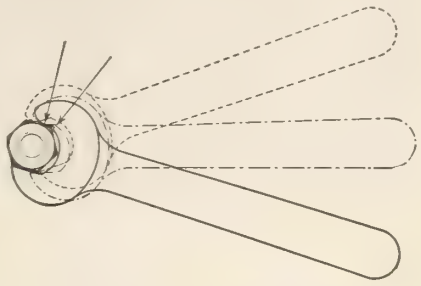
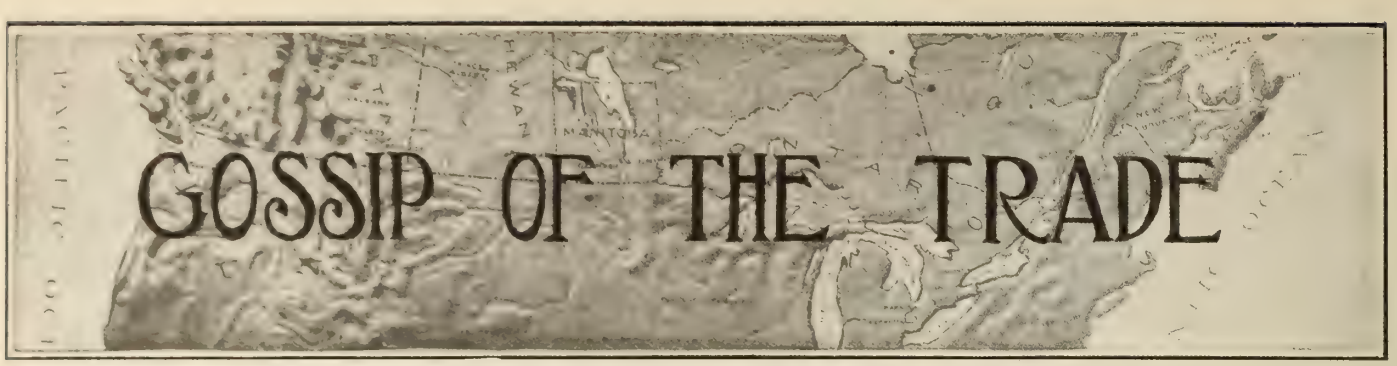


Diagram showing action of the Williams Ratchetless-Ratchet-Rench.



Walter Hare, plumber, Cobalt, has assigned.

Ross & Taylor, plumbers, Vancouver, have dissolved.

Atchison & Bradford, plumbers, Montreal, have dissolved.

P. P. Raby & Co., plumbers, Montreal, have been registered.

P. D. O'Connor has given up his plumbing business at Calgary.

Desmarchais & Cie., plumbers, Montreal, have been registered.

Richard W. Gordon, plumber and tinsmith, Harrow, Ont., has assigned.

Filion & Roberge, pipe manufacturers, Victoriaville, Que., have dissolved.

The assets of the Ville Marie Plumbing Co., Ville Marie, Que., have been sold.

The bailiff is in possession of the premises of Roland & Jennings, plumbers, Winnipeg.

Fred. Gibson and Osborne Wallace have purchased the plumbing and tinsmithing business of Fred. A. Cameron, at Lumsden, Sask.

M. M. O'Connell, Ottawa, has secured the plumbing contract for the stores of Dr. J. E. Taggart on the corner of Rideau and Little Sussex, that city.

Arthur Montague, gas fitter, Wallaceburg, Ont., is opening a store in Dresden, to which the natural gas pipe line is being extended, and will handle a line of gas fitting supplies.

The library and baths committee of the Winnipeg city council has endorsed a widely signed petition for the erection of public baths, costing $50,000. This ensures the adoption of the scheme.

The Saver Electric Co., consistent with their local enterprise, have opened a branch establishment at No. 1 Wellington St., Sherbrooke, Que., where a complete stock of electrical fixtures and accessories will be carried.

L. L. Anthes, of the Anthes Foundry and Holt Gurney, of the Gurney Foundry Co., Toronto, are members of the [illegible] Manufacturers Association party now travelling in the West. They will go to the Coast, calling on the trade whenever opportunity warrants.

J. W. Bruce, representing Toronto plumbers, steam and gas fitters' union, at the International convention which opens in St. Paul on Sept. 19, left on Thursday for that city. It is understood that an organizer for Canada will be appointed by the International Union.

A special meeting of the Winnipeg School Board awarded the tenders for the plumbing, heating and ventilation of the two new technical high schools to the Standard Plumbing and Heating Co., for St. John's school, at $35,630, and for the south end school to Cotter Brothers at $35,397.

Electric wiring, W. J. McGuire, $131; plumbing, Fred Armstrong, $493; heating, Bennet & Wright, $898, were the tenders accepted for the new fire alarm hall at Toronto. For the office addition to this building the contracts went for plumbing, Fred Armstrong, Ltd., $712; heating, Purdy & Mansell, $767; electric wiring, W. J. McGuire, $129.

A third cupola furnace has been added to the Gurney Foundry plant at Toronto Junction, the two cupolas already there being inadequate to keep up with present business. In connection with the company's Canadian growth it is interesting to note that the same concern is building at South Framingham, Mass., one of the largest radiator plants in the world.

On Saturday noon 600 Montreal plumbers are expected to go out on strike. This decision was arrived at at a secret meeting of the union held on Thursday, Sept. 15. The strike promises to be long drawn out as the men say they do not expect that the master plumbers will accede to their demands. They are asking an increase in pay, but refuse to give details of their demands.

Alex. McBain, seventh vice-president, in company with George Coghill, of Vancouver, twelfth vice-president of the International union of plumbers, steam and gas fitters, who has been in Toronto on business, left for Chicago on Thursday night to attend a meeting of the Executive Committee of the Plumbers' International which met there on Friday. They will then proceed to St. Paul in time for the convention next week.

The Wallaceburg Brass Works, which has been carrying on business in the town hall property for the past four years, intends erecting a permanent factory in the near future, provided the town gives some concessions. The concern now employs 60 hands and will require 100 when the new factory is completed. The board of trade has recommended that the company be granted a fixed assessment of $5,000 for ten years for school taxes, exemption from other rates, and if a town waterworks is established, free water for the same period. A by-law to this effect will be submitted to the electors in January.

The contract for heating and ventilating the new Manning Avenue School, Toronto, was awarded to Keith & Fitzsimmons, at $5,495. R. Seager, whose tender for the same work and the plumbing, the board had previously accepted, at $5,450, wrote the committee saying that owing to a clerical error his tender for plumbing had been omitted, for which $615 should have been added. The committee refused to accept his tender at that increased amount, so Mr. Seager is compelled to forfeit his deposit of five per cent. of his tender, which amounts to about $272.50. The tender of Fred Armstrong for the plumbing at $575 was accepted.

The contracts for the new central lighting and heating plant for the University of Toronto, amounting to $250,000, have been awarded by the Board of Governors of the University, and work will be commenced within a week. The contract for the boilers was awarded to Babcock & Wilcox, a Glasgow firm, while W. J. McGuire, Ltd., Toronto, secure the contract for the heating mains. The original specifications on which tenders were invited numbered about a dozen, but most of them have been awarded to the firms securing the more important contracts. The work, which is in charge of Architects Darling & Pearson, will be carried forward as rapidly as possible. The plans of the power house, from which all the University buildings will be lighted and heated, are unusual, in that the building will be almost entirely below the general level of the University grounds. It is being built in a small ravine and only the roof will be visible. The heating plants now in the various buildings will, of course, be removed, but the contractors are expecting to make use of a great deal of the material in them.

New Buildings, Water and Sewerage Systems

Opportunities Offered by Municipalities and Private Enterprise for New Plumbing, Heating, Ventilating or Sanitary Systems—Work Being Undertaken in Every Section of the Dominion.

Municipal Undertakings.

Castor, Alta., will instal a waterworks system at an estimated cost of $85,000.

It is proposed to erect a reservoir for the high pressure service system at Halifax.

A by-law will be voted on at Prince Albert to expend $12,000 for a filtration plant.

Ottawa contemplates installing additional street hydrants for fire protection purposes.

Verdun, Que., town council will extend its water dyke, at an expenditure of $200,000.

The J. L. White Co., of Sioux Falls, S.D., will instal a waterworks system at Souris, Man.

By-laws have been passed at Calgary advised Winnipeg, to take immediate steps for the establishment of a more adequate water supply.

Strathcona ratepayers voted in favor of extending its sewerage and water systems at a cost of $48,000.

The contract for the construction of sewers at Yorkton, Sask., was awarded to N. B. McInnis, of Regina.

Medicine Hat proposes replacing all wood pipes by iron pipes in its waterworks and sewage systems.

J. C. Kennedy was awarded the contract for the laying of the Tenth avenue sewer, at Vancouver, at $48,700.

A by-law to extend the sewage system at a cost of about $8,300 will be voted on on August 29, by Berlin's ratepayers.

A committee has been appointed at Esquimalt, B.C., to gather all available data on the installation of a sewerage system.

Engineer Kennedy, of St. Catharines, has submitted a report for the improvement and extension of the waterworks at a cost of $52,000.

A by-law will be submitted to raise $27,000 for the construction of a sanitary sewer at Fernie, east of Crow's Nest Southern Railway.

The contract for the supply of sewer pipe at Vancouver, has been awarded to the Dominion Glazed Cement Pipe Co., Vancouver, at $70,910.

Gartshore-Thompson Co., Hamilton, were awarded the contract for special castings for the Horton St. pumping plant, London, at 4¼ cents a pound.

The Moose Jay City Council instructed City Engineer Wilson to revise plans for the sewage disposal plant, and call for tenders to be in by October 17.

The Toronto Board of Control has instructed the city engineer to report on the cost of constructing storm sewers to relieve the present system in time of flood.

The Provincial Board of Health has to raise $284,000 for watermains; $30,000 sewer connections, and $125,000 for building and equipping an addition to the electric power plant.

Tenders addressed to L. N. Senecal, secretary, Montreal Board of Commissioners, will be received until September 14 for steel pipe, dredging work and concrete pier in connection with the new intake for the Montreal waterworks.

In order to provide drainage for the southern part of West Toronto, City Engineer Rust recommends the construction of a 3-foot main sewer and to provide drainage for the High Park district. Mr. Rust recommends a 5-foot sewer.

Contract A, for laying sewer and water mains, etc., at Swift Current, was awarded to Laidlaw & Macdonald, of Fort William, at $39,179. For contract B, the erection of disposal works, the successful tenderers were also Laidlaw & Macdonald at $8,299. Contracts C and E were not awarded.

Public Buildings.

A $10,000 fire hall is proposed for Collingwood.

A new Methodist church will be built at Haileybury.

Plans for Woodstock's new city hall have been approved.

Klaw & Erlanger will build a fine new theatre at Vancouver.

A new hospital to cost $16,000 will be erected at Ladysmith.

$61,000 will be spent for new exhibition buildings at Calgary.

It is proposed to erect a jail and courthouse at Abbotsford, B.C.

It is proposed to erect the Huron county sanitorium at Goderich.

The Methodist Church are preparing plans for a college at Calgary.

Plans are being prepared for a fireproof library building to cost $40,000.

The proposed Saskatoon hospital extensions will cost about $108,000.

The Church of England will have a building erected at Mortlach, Sask.

The Dartmouth, N.S., school board have selected a site for the new school.

Wilson & Herald are the architects for the new Strathcona school to cost $15,000.

Alex. Johnston secured the contract for the Outlook, Sask., school at $17,500.

Lethbridge ratepayers passed a by-law to spend $75,000 to build another new school.

A new fire hall has been recommended by the Fire and Light Committee of Moncton.

Ramsdale & Robinson secured the contract for the new Methodist church at Saskatoon.

A new college for the O.M.I. Order of the Catholic Church is to be erected at Strathcona.

The Knights of Pythias propose to erect a hall at North Vancouver, at a cost of $15,000.

D. McLean secured the contract to erect the new municipal building at Waskada, Man.

The Protestant School Board are considering the erection of a new school house at Sherbrooke.

The Canadian Northern and Canadian Pacific Railways will build new depots at St. James (Winnipeg).

A by-law to raise $2,500 for the erection of a fire hall at the south end of Niagara Falls was carried.

The Protestant School Commissioners of Longue Pointe Ward, Montreal, will erect a new school building.

The site for the new government buildings at Fort George, has been chosen. Construction will proceed at once.

Weeks & Keefer, architects, will call for tenders shortly for a fire station at Ottawa. Estimated cost $25,000.

The Post Office building on St. James street, Montreal, will be rebuilt instead of repaired as originally intended.

A. E. Faulkner, Brantford, has secured the contract for the new collegiate institute at Dunnville, at $35,000.

The First Baptist Church, Victoria, will erect a temporary structure pending the building of their new $50,000 church.

Hood & Scott, architects, Fort William, are preparing plans for a new Jewish Synagogue to be erected there.

H. E. Gates, architect, Halifax, N.S., has prepared plans and specifications for a public school building at New Glasgow.

Horwood, Taylor & Horwood have been chosen as architects for an addition to the Perley Home for Incurables at Ottawa.

The contracts for the erection of the Jewish Synagogue at Kingston, have been awarded. The building will cost over $10,000.

The Montreal Catholic School Board have taken out a permit for the erection of a new school on Visitation Street, to cost $105,000.

Preliminary steps have been taken toward rebuilding the Catholic Church and convent at Nanaimo, destroyed by fire several weeks ago.

Work on Smith's Falls' new $29,000 hospital has been begun. The Board of Education has purchased a site for a new collegiate institute there.

The members of St. George's Anglican Mission, Vancouver, have determined to take in hand the building of a church on the lots they have secured.

The contract for the erection of the new two-room public school, at Cadboro' Bay, B.C., was awarded to Ald. W. M. Ross, Victoria, at $2,900.

Alphonse Venne is preparing plans for the erection of a church building chapel and presbytery for the parish of St. Joseph, Ste. Narcisse, Que.

Fraser & Hutchinson, Regina, Sask., are the architects for the four-room school, to be erected at Bladworth at an estimated cost of $8,000.

The congregation of Grace Lutheran church, Victoria, has awarded the contract for their new church building to L. P. Fredrickson for $6,000.

The School Commissioners of St. Joseph, Que., have awarded the contract for the erection of their new school to Liniere Vachon, at $15,000.

The Masons of Grandview have decided to erect a temple and have purchased a site where it is intended to erect a public hall with commodious lodge rooms.

A. Content, is preparing plans and specifications for the erection of a school building for the Montreal Catholic School Commissioners, in Rosemount Ward.

The Evangelical Lutherans will build an academy to cost $50,000 at Regina.

A by-law was passed at Wolseley, Sask., authorizing the erection of a $10,000 school.

A by-law will be submitted to provide for the erection of a city police station and court house building and for improvements to the city building at Fort William.

The contract for building the new collegiate institute at Virden, Man., was awarded to W. Manser, of Virden, whose tender was the lowest. His figures were $18,765.

North Winnipeg will ask for $150,000 at an early date, for the erection of a hospital in that portion of the city. Of this sum, $130,000 will be expended upon the building.

The sale is noted of the Bethany Presbyterian property at Ottawa stated to be for commercial buildings. The purchaser is D. H. MacLean. It is expected that a new church will be erected.

The directors of the Strathcona Institute, Vancouver, hope to commence building at an early date, and to have everything ready for taking possession at the New Year. It will cost $25,000.

The contract for the brick, masonry and structural steel work of the new children's hospital building at Winnipeg, was awarded to W. J. Davidson. The new building will be fire-proof and will cost $60,000.

A permit has been taken out for an addition to the present school at the corner of Broadway and Clark drive, Vancouver, to cost $50,000. A permit was also taken out for a new school to be built at the corner of Charles Street and Templeton drive.

La Fabrique de St. Jean de la Croix are erecting a presbytery at Montreal. The general contract was awarded to Boileau Freres, Isle Bizard, Que. Commission Scolaire de St. Jean de la Croix are erecting an educational building. The general contract was awarded to V. Guilbault.

The Port Dover Board of Education have decided to erect a new building for the use of the High and the Public school. The estimated cost is $15,000 and it is expected that the building will be ready for occupation in about a year.

General Building.

A. A. Dick, Calgary, will erect a $150,000 hotel.

E. B. Echlin will build a $2,000 warehouse at Hamilton.

Geo. A. Trail will erect a brick dwelling at Brantford, at a cost of $2,000.

Alex Shields is erecting two dwellings at Montreal, and the contract has been awarded to L. Germain.

Currie & Wallace, London, will erect two dwellings, to cost $6,500, and D. Strathie, two dwellings, to cost $3,600.

Stratford's building permits include: Merchants Bank, alterations, $5,000 and Dr. F. J. R. Forster, residence and office, $4,500.

William Field, dwelling, $2,500, and T. James, brick addition to a warehouse, $9,000, are recent permits granted at Ottawa.

The Electrical Construction Co., Vancouver, and J. W. Spencer, of the same place, will each erect new business blocks to cost, respectively, $16,000 and $13,000.

S. Pearcy, three attached dwellings, $5,500; Miss Gertrude Abner, pair dwellings, $5,000; T. P. Stewart, dwelling, $10,000; Bailey & Leslie, four detached dwellings, $14,000, and D. B. Bowerman, dwelling, on 4 Whitney avenue, $9,000.

The following building permits were issued recently at Vancouver; F. Rippon, frame dwelling, $2,000; R. Hudson, frame dwelling, $2,500; A. Matheson, frame dwelling $3,200; Leonard Wett, store building, $5,000; Munro & Sons, four frame dwellings, $10,000, and A. Chisholm, frame stable, $4,000.

Some of the larger permits granted at Winnipeg recently include: W. L. Oade, store, $12,000; G. Schneider, dwelling, $3,000; Bulman Brothers, warehouse, $4,000; W. T. Carson, house, $5,500; Wasyl Klyulk, house, $3,200; M. Dorfman, house, $4,000; E. L. Stady, residence, $4,500, and D. Cristall, two residences, $3,000.

Building permits granted recently at Calgary, include Catherin McDonald, $3,000 house; Mrs. Harvey, $2,500 house; J. W. Rae, $2,000 house; A. E. McGinnis, $2,000 house; Mrs. J. Murison, $4,000 house; G. H. Smith, $4,000 house; the Colgrove Land Co., a number of houses, worth $1,600, $1,800 and $1,200; Anson Pier, $2,000 house, at Sunalta.

Recent building permits at Victoria include: W. S. Drewry, dwelling, $5,000; H. W. R. Moore, dwelling, $4,500; Edwin Tomlin, dwelling, $2,700; W. B. Revercombe, dwelling, $3,000; A. J. Abbott, dwelling, $2,100; Miss M. Jones, dwelling, $6,750; Ernest McDonald, dwelling, $2,850; J. McLean, dwelling, $4,000; Gus A. Porter, dwelling, $3,500; Mrs. Fred Galley, dwelling, $2,500; H. Whitwell, dwelling, $2,500; W. J. Palmer, dwelling, $3,500, and H. D. Tilley, house, $3,785.

Ira C. Jones, dwelling, $2,000; M. Parsons, dwelling, $3,500; John Hardy, dwelling, $3,000; John Elliott, rooming house, $5,000; J. R. Reid, dwelling, $4,000; Geo. Adams, store, $2,500; Seventh Avenue Methodist church, $5,000; All Saints' church, $2,900; Vancouver Breweries, addition to Waverley Hotel, $8,500; C. P. R., $3,550; P. Torrance, $3,000; G. Simpson, $2,500; H. B. Arnold, building, $2,200; Anna Karne, building, $2,400; Warrell & Edwards, building, $15,000; E. B. McCankey, buildings, $6,000; John Morrison, building, $2,800; Braithwaite & Glass, $3,000; R. Straight, $5,000; J. Crean, $6,000; D. T. Devine, $2,000; J. Ball, two houses, $4,400, are permits granted lately at Vancouver.

Building permits at Toronto include: Mrs. J. A. McGillvary, dwelling, $10,000; Alex Lochare, dwelling, $5,000; C. S. Gray & Sons, two detached dwellings, $7,000; G. W. Dale, four attached dwellings, $6,000; H. Thomas, one pair dwellings, $4,000; W. H. Walsh, one pair dwellings, $4,600; W. R. Waters, one pair dwellings, $4,000; F. W. J. Hill, dweling, $4,000; James Hepbourne, one pair dwellings, $4,000; T. Holmes, dwelling, $4,200; J. W. Clare, one pair dwellings, $4,600; Houghton & Breeze, one pair brick dweelings, $4,200; John Hoidge, dwelling, $4,000; R. C. Vaughan, dwelling, $5,500; Briggs & Beecroft, two detached dwellings $5,800; E. A. Lowe, three attached dwellings, $7,500; E. B. Mackenzie, dwelling, $5,000; Mrs. Grafton, dwellings, $8,000.

Recent building permits at Winnipeg, include: J. A. Machray, house, $12,000; the Hall Co., three houses, $10,000; H. McKinney, two houses, $3,200; A. Macaw, house, $5,000; L. Vogel, house, $2,000; Canadian Bag Co., alterations, $6,000; L. James, two dwellings, $4,000; M. Lightburn, two dwellings, $3,400; John A. Saul, dwelling, garage and stable, $11,200; M. Simmons, two houses, $4,000; J. F. Parker, $3,000; H. McKenzie, house, $2,500; C. Newman, dwelling, $2,000; Wallace & Aikins, two dwellings, $9,600; O. Storseter, dwelling, $3,000; A. Macdonald Co. garage, $4,000; Sherwin & Vincent four house, $7,200; H. Sansome, house, $2,000; B. Donner, two dwellings, $4,400, and Walter Beach, two dwellings $4,400.

WHERE WAS HARRY MUNDY.

Sam Good recently achieved local fame as the finder of a $1,000 diamond ring. Not long ago a lady left her valuable ring on the kitchen sink and in sweeping up the refuse the diamond got mixed with the rubbish and was thrown into the water closet bowl and carried through the waste pipe. In great perturbation the lady rushed to Mr. Good's plumbing shop and explained her loss and Sam, who himself is the owner of several sunbursts, sympathized deeply with her distress. She engaged him on the spot to locate the diamond for her, agreeing to pay him $150 if he was successful and to pay him only for his time should he fail. These were the conditions imposed by Mr. Good and accepted by the owner of the diamond. After working about a week tearing up the plumbing and digging the street, one of Sam's men found the ring in the sewer.

The owner of the ring was naturally happy over its recovery and gladly paid Mr. Good his fee of $150, considering it well worth the price even if the contract was somewhat unique. Many stories, of course, are known by plumbers in regard to finding valuable jewelry in waste pipes and in sewers, but it is not often a $1,000 diamond is picked up.

PLUMBING AND HEATING MARKETS

MONTREAL.

Sept. 14.—No further advance is noted in solder although tin reached higher figures in the primary markets than when the last increase of 2c in solder was made. Naturally, however, the market is very firm. Soil pipe, lead pipe, iron pipe and radiators and boilers are all unchanged. There is a very good tone all the way round. The fall building season is opening up well, and supply houses anticipate heavy business.

Stocking up is commencing at many points served by water freight, and orders are well distributed all over the country. The demand is developing for the better grade of supplies, and landlords generally seem to be taking more interest in the plumbing—but there is much more room for reform in this direction.

Soil Pipe—The demand is very pronounced and makers are working at full pressure to keep up with orders which are usually marked rush. The shipping is well distributed. The market is firm, and we quote light 60 off, medium and heavy 70 and 10.

Lead Pipe—Lead pipe is unchanged in price. The demand is active, plumbers not only buying for their immediate wants but stocking up a little. We quote pipe and waste at 30 off, traps and bends 50, calking lead 5c per lb.

Solder—Although the tin market has gone ahead since last quotations on solder no further advance in the latter metal has been made. The market is very firm with buying stimulated instead of being checked by the higher figures. We quote half and half 22c, and wiping 20½c.

Iron Pipe—There is a strong demand for iron pipe, and supply houses have to ship freely. We quote: ¼-in. black, 63; galvanized, 48; ⅜-in. black, 59; galvanized, 44; ½-in. black, 69; galvanized, 59; ⅜ to 4-in. black, 71½; galvanized, 61½.

Radiators and Boilers—The call on radiators and boilers continues as heavy as ever, and immediate delivery is wanted, in the majority of cases. We continue to quote: Steam boilers, 60 and 5; round hot water boilers, 50 and 10; wall and hot water radiators, 50 and 7½; steam radiators, 50 and 7½ and 2½ per cent.

Scrap Metal—The market has improved in buying with prices unchanged. We quote: Heavy copper wire, 11½c; light copper bottoms, 10c; heavy red brass, 10c; heavy yellow brass, 8c; light brass, 6¼c; tea lead, 2½c; heavy lead, 2¾c; scrap zinc, 3c; cast iron $16.

Metals—Tin, although very firm in sympathy with the primary markets is still at 37c. Other lines are unchanged. We quote: Tin, 37c; copper, 13½c; imported lead, $3.75; domestic lead, $3.60.

TORONTO.

September 14.—Trading in plumbing goods is splendid just at present, and in steam and hot water heating systems and outfits manufacturers state that this fall should prove to be a record-breaker.

All enamelware lines are in demand, and there is still a lively call for iron pipe. Tin showed a weakness early in the week, but the price is yet sufficiently high to keep solder quotations firm.

Inquiry is giving place to orders from interior points, and stocks for reserve are moving out to north shore points, the nearing close of navigation stimulating business in that direction.

Enamelware—Both country and city demand is brisk just now. The country trade is buying for winter consumption. Northern Ontario and north shore points are getting in stocks before the close of navigation. All the supply houses report good business in baths, sinks and closet combinations for installation in new residences. Quotations are unchanged.

Soil Pipe—Fair-sized stocks are being carried. Demand has been good for ordinary sizes, and is still fairly active. Light pipe is quoted at 60 and 10; medium and heavy at 70 and 10, and 7 and 8-inch sizes, 50 per cent. Fittings are unchanged at 70 and 10 off.

Lead Pipe—Demand is steady and satisfactory, and much better than a fortnight ago. Prices remain at 30 per cent. off. Traps and bends are quoted at 50 per cent.; calking lead is unchanged at 4½c per lb., and lead waste is at 9c a lb. New water services in old houses is responsible for some of the trading.

Iron Pipe and Fittings—Smaller sizes of pipe have still a big call, the steam heating trade buying largely. Stocks are low in jobbers' hands. Prices hold unchanged. Discounts on malleable fittings range from 37½ to 40 per cent., with cast iron fittings from 60 to 65 off. Bushings, standard, are 70, and malleable are 65 per cent., nipples are 75 and 10; headers, 60, and flanged and malleable-lipped unions, 65 per cent. Galvanized pipe is $6.35, and black pipe, $4.70 per hundred feet, 1-inch size.

Solder—There was a cut of a cent in the price of tin this week, but that metal is yet so high that solder is firm at last issue's quotations. The various brands run from 18c to 19c for wiping, and 19½c to 20c for half-and-half. Supplies are plentiful and demand fair.

Brass Goods—Orders are plentiful and business is good. The market is firm and demand steadily active. Prices are unchanged. Plumbers' brass goods are greatly wanted just now.

Boilers and Radiators—Demand is exceedingly active, and deliveries are delayed because of the rush. Some very heavy orders have been received since the opening of September. This fall is apt to break last year's record. Discounts continue at 50 and 10 for hot water boilers and radiators, with 2½ more quoted off steam radiators. Instalations are very active at present.

Metals—Tin, 37c; copper, 13½c; lead, $3.80 (imp.) $3.75 (dom.).

Scrap—Iron, ½c; copper, 10c to 11c; lead, 2½c.

ABUSE OF PLUMBING FIXTURES.

By frequent reference to this subject we hope to instil in all who have to do with the actual handling of plumbing fixtures a greater respect for the manner in which they should be handled.

Quite recently the writer had occasion to watch closely the installation of a decorated exterior tub, of the type which tiles into the wall and floor. The tile setter and plumber were requested to handle the fixture with care in order not to mar the outside finish.

The tile setter followed instructions admirably, even going so far as to fully cover the fixture inside and out with a large tarpaulin in order to prevent its being splashed. When he had finished his work the tub was perfectly fresh and clean, but after the plumber had put on the brass fittings there was an entirely different story.

The end of the tub on which the supply and waste fittings were installed was entirely covered with the marks of greasy fingers and hands and there were several deep scratches in the outside finish, indicating that his wrench had slipped or was carelessly permitted to rub against the tub.

The condition of the tub was really distressing after the plumber took his leave, without even trying to restore it to its original condition.

It is universally agreed that a good job of plumbing is the plumber's best advertisement. On this particular job the piping system indicated the best of workmanship, but the installation of the fixtures was quite the opposite, and it was the result of nothing but pure carelessness and indifference. The owner was left with anything but a good impression, and the chances are that he would not employ the same plumber in the future.—Modern Sanitation.

Vancouver permits recently granted include: R. Leigh Spencer, $5,500; S. Hovick, $6,900; W. G. McIntosh, $3,500.

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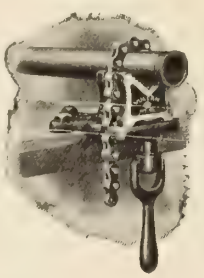
YOU can display your goods to better advantage through the use of up to-date fixtures. We are specialists in the planning of stores and offices. Our catalogue contains illustrations of many new features and several handsomely equipped stores and offices. Shall we send you our catalogue J P Jones Bros. & Co., Ltd., 30-32 Adelaide St. W., Toronto. (tf)

1/8" pipe

"Vulcan" Chain Pipe Vise

at once presents a proposition of strength, wear, compactness and capacity unapproached or unequalled by any similar tool.

In service it is unbreakable; a child can provide strength for an inflexible grip and any ordinary tool bag will carry the Vise to jobs away from the shop—weight, 10 pounds.



Capacity alone will insure permanent trade on this splendid, all wrought steel tool. Parts interchangeable and guaranteed discount from the dealer.

J. H. WILLIAMS & CO.

No. 77 Richards Street BROOKLYN, N.Y.

Superior Drop-forgings

4" pipe

DIRECTORY OF MANUFACTURERS

Plumber and Steamfitter receives from time to time, enquiries for the names of manufacturers of various lines. These enquiries come from firms who usually intimate they have looked through Plumber and Stamfitter but cannot find any firm advertising the line in question. In many cases these firms are anxious to secure the information at once. This page enables manufacturers to keep constantly before the trade lines which it would not pay to advertise in larger space.

EMERY WHEELS.

Canadian Hart Wheels
442 Barton St. East, Hamilton
Corundum and Emery Wheels
Grinding Machines, Beaver
Oil Stones.

FILTERS.

Anti-Splash Tap Fitters
The "Galvo" Filter and Water Steriliser
"Perfection" Fire Extinguishers
There's good money in them for hardware dealers.
Write for Prices.
The Anti-Splash Filter Co.
OWEN SOUND - - ONTARIO

MANUFACTURERS' AGENTS.

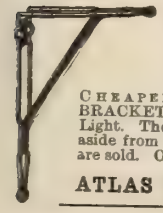
The Manufacturers Sales Co.
MONTREAL
Frederick H. Reid, Manager
Representing manufacturers of high-class specialties, including "Handihook," "So-Clean," and others.
We are open at any time to receive propositions from first-class manufacturers who wish to be represented in Canada. Write at once. Best of references.

Western Distributors, Limited
CUSTOMS BROKERS
Wholesale Commission Merchants and Manufacturers' Agents. Cars Distributed, Warehoused and Forwarded. Warehouse on Transfer Track. Business solicited.
OUR POSITION IS YOUR OPPORTUNITY
SASKATOON, WESTERN CANADA

METAL PRODUCTS.

Established 1880
NEITHER FICTITIOUS NOR EXORBITANT
ORDER AND USE
LANGWELL'S BABBITT
GEORGE LANGWELL & SON, Makers, MONTREAL

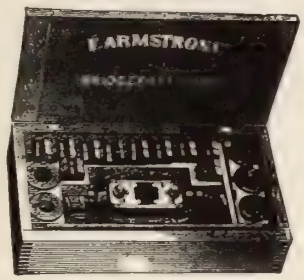
SHELF BRACKETS.



Will Hold Up a Shelf
That's what a shelf bracket's for For this purpose there can be NOTHING BETTER, NOTHING CHEAPER than the BRADLEY STEEL BRACKET. It is well Japanned, Strong and Light. The saving on freight is a good profit aside from the lower price at which the goods are sold. Order direct or through your jobbers.
ATLAS MFG. CO., NEW HAVEN

Keep in mind the dominant fact that mankind from its first appearance on the earth has been schooled by nature to look for signs; for invitations to taste; for suggestions as to what to wear. Tell your story briefly, forcibly, truthfully, and address it through the proper media and you can successfully apply advertising as a means to increased distribution.

When writing advertisers kindly mention having seen the advertisement in this paper.



THIS IS THE DAY OF

INVESTIGATION

Get in line and let us prove to you that the

GENUINE
Armstrong Stocks and Dies
ARE THE BEST.

Catalogue on request.

The Armstrong Mfg. Co.
317 Knowlton St.
Bridgeport, Conn.

Assignee's Sale of Plumbing Stock

In the matter of
The F. C. Hunt Plumbing Company
London, Ont., Insolvent.

Will be sold by public auction, by J. W. Jones, on the premises, 619½ Richmond Street, London, on Friday, September 30th, at 2.30 p.m., the stock-in-trade, plant, etc., of the above insolvent, amounting to $5,496 15. Subject to the right of the Vendor to withdraw any of said goods which may be sold by him prior to said sale.

TERMS: ⅓ cash, balance at 2 and 4 months secured with interest at 7% per annum.

STOCK AND INVENTORY can be inspected on application to the undersigned.

ALFRED ROBINSON,
Assignee
Masonic Temple, London

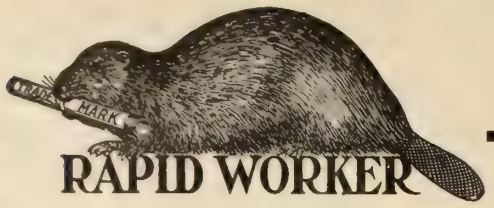
Ivey & Dromgole, Barristers
Solicitors for Assignee

BRONZE POWDERS

BRONZE LIQUIDS

The Canadian Bronze Powder Works
Montreal Toronto
Works, Valleyfield

Send us your orders and we guarantee the quality



RAPID WORKER

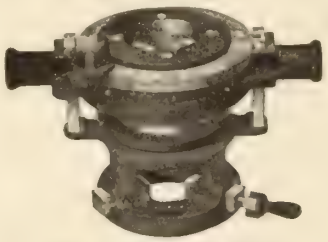
One man with a Beaver Die Stock is worth two or three men with any other Die Stock made.

"Beaver" Adjustable Die Stocks

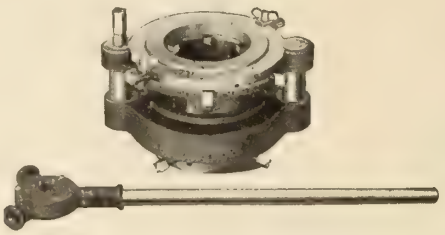
No loose Bushings or loose Dies on these two tools and they cut ¼, ⅜, ½, ¾, 1, 1¼, 1½, 1¾ and 2 inch pipes.

No. 6, threading ¼, ⅜, ½, ¾ inch, complete

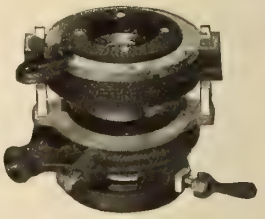
have cut the cost of pipe threading in two because they will thread all sizes of pipe without changing dies. They are built on the receding principle which positively enables one man to thread any size of pipe and produce absolutely tight joints for all work, including hot water. They save the time formerly used up in changing dies and looking after loose parts and eliminate all of thread-stripping when backing off.



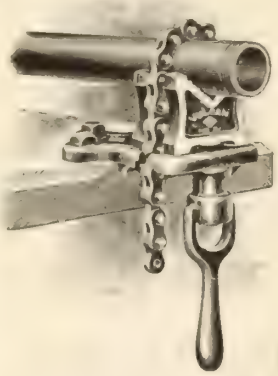
No. 25A, threading 1, 1¼, 1½, 2 inch pipe. A boy can operate it.

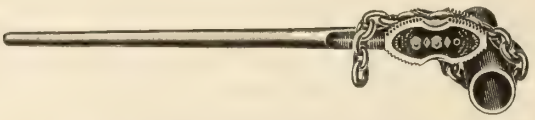


No. 60. Uses two sets of dies. One set cuts 2½, 3, 3½ in. the other cuts 4, 4½, 5, 6 in.; they are inserted without removing any parts.

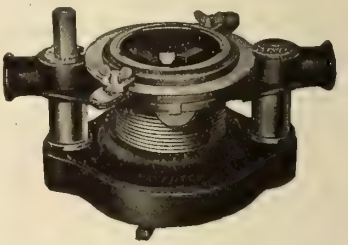


No 26A. Cuts 1, 1¼, 1½ and 2 i pipe. A boycan operate this tool





Pipe Vise. Takes pipe ⅛ to 4 inch.



No. 41. Cuts 2½, 3, 3½ and 4 inch pipe.

THE WARREN ADJUSTABLE DIE STOCK

With Non-receding Dies.

Made in FOUR Different Sizes.

Each size cutting two sizes of pipe without changing dies.

A strong, durable tool, threading two sizes of pipe without changing dies. Particularly recommended for those who want a Die Stock of just the required size and weight for two sizes of pipe.

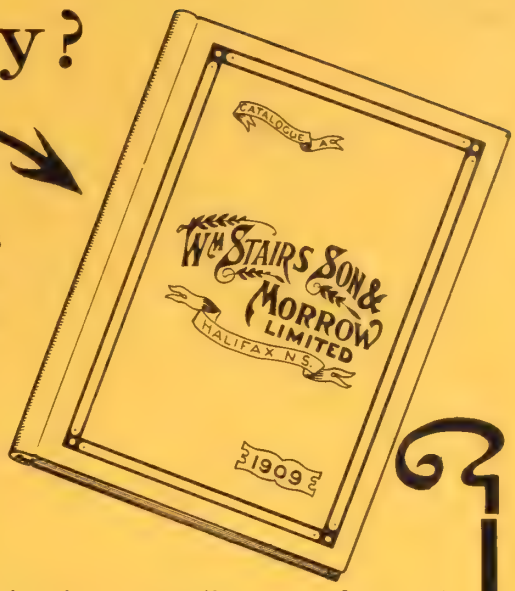
GET PRICES TO CONSUMERS:—

No. 120,	¼ in. - ⅜ in.	$5.00.	Extra Dies, cutting two sizes each (also ⅛), Right or Left $1.50
No. 121,	½ in. - ¾ in.	5.50.	" " " " " Right or Left 1.60
No. 122,	1 in. - 1¼ in.	6.00.	" " " " " " " 2.00
No. 123,	1½ in. - 2 in.	7.00.	" " " " " " " 2.00

Write us for Illustrated Price Lists.

BORDEN CANADIAN COMPANY, 66 Richmond St. East, Toronto, Ontario.

Have You Got a Copy?



The WISE PLUMBER keeps a copy of this catalog handy. You can order from it at any time and be sure of receiving the right goods at the right time.

SCOTIA PLATE A—246

"SCOTIA" PLUMIBNG SUPPLIES

embrace all the leading lines of plumbers' supplies manufactured by the most reliable concerns in the business. As our buying capacity is unusually large, we can quote very close prices on goods shipped anywhere. If you haven't got our catalog, write us for a copy.

Wm. Stairs, Son & Morrow, Limited

Halifax - - - - Nova Scotia

LOOKING AHEAD FOR RADIATOR COMFORT

Buying a Radiator is not like buying a winter coat; one can't wait till the cold weather comes. You should get after likely purchasers **now**, to insure comfort for them when winter comes. The

"Sovereign" Radiator

is made in a number of designs, and fits handily into any vacant space. It is economical and effective, and embodies all the latest improvements and ideas. It is a heater you can candidly recommend.

Send for Booklet and Details.

Taylor-Forbes Co.

Limited

Head Office and Works - GUELPH, ONT.

TORONTO—1088 King St. West. MONTREAL—246 Craig St. West. Winnipeg—The Vulcan Iron Works, Ltd. ST. JOHN, N.B.—H. G. Rodgers, 53½ Dock St. QUEBEC, QUE.—The Mechanics Supply Company. VANCOUVER, B.C.—Taylor-Forbes Co., Ltd., 340 Pender St. CALGARY—The Barnes Co., Limited.

Plate F
199

The Standard Ideal Company Ltd.

Dimensions Lavatory 18 x 21" Oval Bowl 11" x 14" Back 8"

We have a large number of other styles including many new designs to select from--For which see our catalogue F now ready for distribution.

We are also manufacturers of full lines of Bath Tubs, Shower Baths, Lavatories, Sinks, Laundry Trays, Wash Sinks, Range Closets, and Urinals, etc., etc.

Head Office and Factories, Port Hope, Ontario

Branch Offices and Sample Rooms: Toronto, 119 King St. East; Montreal, 155 Notre Dame St. W.; Winnipeg, 154 Lombard St.

Empress Self-closing Work

is the ONLY satisfactory Self-closing Work for use in Hotels and Public Buildings.

Large numbers in use in Montreal and on the Pacific Coast.

Empire Closets and Brass Goods with our name on are unconditionally guaranteed.

WOODWORK INCLUDED

EMPIRE MFG. CO., Limited, LONDON, CAN.

PUT A

DART UNION

on in place of that right and left joint.

You can do it easier, quicker, and know that it will never leak. Then how simple it is to disconnect.

Your Jobber Will Supply You.

Dart Union Company

TORONTO *Limited*

MANUFACTURERS

Look for the name DART on the Union

PLUMBER & STEAMFITTER

and Sanitary Engineer of Canada

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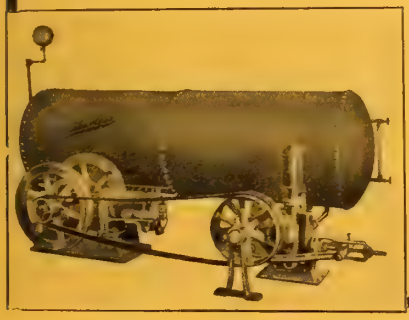
Vol. IV, No. 6 (New Series). Publication Office : TORONTO, OCTOBER 1, 1910. Old Series, Vol. XXII. No. 19

Peerless WATER SERVICE SYSTEMS

Lots of Plumbers

in all parts of Canada are making good profits and sound reputations by installing "Peerless" Systems; and precisely the same opportunity awaits your decision. Don't hesitate to inquire. Just write us, saying: "Send me full particulars concerning your 'Peerless' Systems." We'll answer your request by return mail.

A big demand for them.
Specified by first-class architects
Good profit on every installation
Your apprentice can install them
Unconditionally guaranteed by a Canadian firm
Every sale leads to another and enhances your reputation



National Equipment Company

LIMITED

TORONTO ONTARIO

TANKS of all sizes and for all purposes

Beaver Brand

Cast Iron Enamel Ware

Famed for its Smoothness, Colour and Wear

This Cut Illustrates Our

Beaver Brand Roll Rim Sink

This is one of our leading and best known lines, which has given satisfaction throughout the Dominion. Our new and up-to-date plant is unrivalled for the production of Bath Tubs, Slop Sinks, Kitchen Sinks, Laundry Tubs, Lavatories, Closets, etc. Customers can rely on having their orders promptly filled. Every article of "BEAVER BRAND" manufacture is guaranteed.

Amherst Foundry Co., Ltd., Amherst, N.S.

ONTARIO SALES AGENT:

MONARCH BRASS MFG. CO., LTD., 178-180 Victoria Street, TORONTO

MARITIME PROVINCES	MONTREAL, P.Q.	WINNIPEG, MAN.	VANCOUVER, B.C.
All Jobbing Houses	All Jobbing Houses	E. B. Plewes, 120 Lombard St.	A. O. Campbell

Quality THE CROWN Talks !

When you see the "Crown" Trade Mark on *laundry goods*, you will know that you are dealing with an article in which QUALITY is the pre-eminent feature. We spare no pains in the selection of materials, skill in making and care in finishing "CROWN" goods, and the result is an article second to none on the market.

Send for Catalogue

H. C. BEDLINGTON & CO.

223 Adelaide Street West - - TORONTO

SUPPLY

"Kerr" Radiator Valves

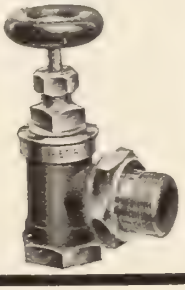
on your heating work, and your valve troubles are over

We charge the price and furnish the reliable goods

The

Kerr Engine Co., Limited

Look for Our Name "KERR" on All Genuine KERR VALVES



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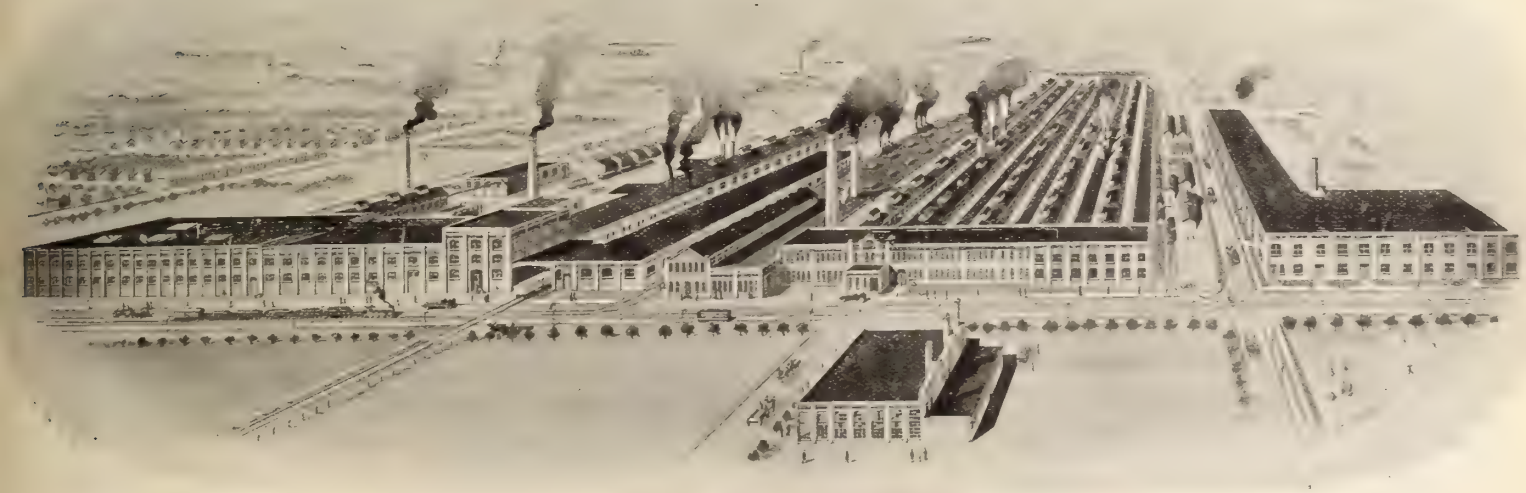
-Malleable and Cast-iron-pipe Fittings-



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FITTINGS LIMITED

OSHAWA - WINNIPEG - MONTREAL

When Planning a New Installation of Hot Water Heating

Or DISSATISFIED with the old-style, slow, water-logged gravity job

Speak to the Honeywell Man

Your talk will save you DOLLARS

And add to your COMFORT

The "Honeywell" System of Hot Water Heating eliminates all trouble in new jobs

And cures all defects in old installations.
Look into our guarantee

The Honeywell Heating Specialty Company

Wabash, Ind.

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Flanged Elbow

Reducing Flanged Tee
Reducing in Run or Branch

REMARKABLE TESTS

which speak volumes for the superiority of

STANDARD S BRAND FITTINGS!

At McGill College, Montreal, our 1¼ inch Screwed Elbow, guaranteed for 125 lbs., broke at 5000 pounds pressure, and our 3 inch Flanged Elbow, guaranteed for 125 pounds, could not be broken, the packing blowing out at 2800 pounds pressure.

Think what this enormous strength means in point of safety. We make ***CAST IRON FITTINGS,*** all sizes, for Steam, Gas, Oil or Water. Write for details.

STANDARD FITTING & VALVE CO., Limited - GUELPH, ONTARIO

PLUMBERS

We manufacture and carry in stock complete lines of solder, lead pipe, lead waste, block tin pipe, block lead, brass ferrules, iron and lead combination ferrules.

PRICES RIGHT DELIVERIES PROMPT

YOUR INQUIRIES SOLICITED

The Canada Metal Co., Limited, Toronto

Compression Index Basin Cocks

Attractive Design
Mechanical Construction
Encased Washer
Square Threads on Stem
Special Packing
Short or Long Spout

MANUFACTURED, TESTED and GUARANTEED BY

Canadian Brass Co., Limited

Galt, Canada

"Highest Grade" Brass Goods for
Plumbers, Waterworks, and Gas Companies

BRASS-FITTED THROUGHOUT

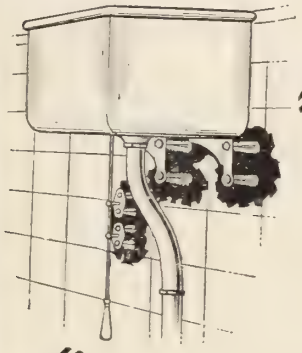
The BURNHAM will not short stroke—and for this reason it is the most suitable pump for HOT WATER SERVICE.

You can always depend on the BURNHAM for handling the condensation from Heating Apparatus, Dryers, etc., etc. Standard sizes in stock.

Darling Bros., Limited

15 OTTAWA ST.

Toronto MONTREAL Winnipeg



This fixture is up to stay!

Ordinary screws won't hold this flush-box. Using wood plugs is unsafe. "Leading-in" is secure, but does not look well. It makes a job that any first-class plumber would be ashamed of.

All the "wise ones" now use

Star Expansion Bolts

when secure but economical fastenings are essential. Once inserted, a STAR will never come out. They don't chip or deface the building material.

Write for Catalogue 74 and free samples to-day.

STAR EXPANSION BOLTS are used and endorsed by leading plumbers throughout the Dominion. Specified by prominent architects.

STAR EXPANSION BOLT CO.

Catalogue Department 74

147 Cedar Street - New York City

Plumber and Steamfitter

and Sanitary Engineer of Canada

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Circulating amongst Plumbers, Steam, Hot Water and Gas Fitters, Sanitary Inspectors, Heating and Ventilating Engineers, City Engineers, Boards of Health, Architects, etc.

TORONTO, OCTOBER 1, 1910

THE QUESTION OF STUDY.

With the long evenings coming on, and the opportunities for going out not so many, or so pleasant as in the summer, young plumbers have a chance of improving their knowledge in the theory of their business. More and more every day is being expected of the plumber. The tasks he has to do now in everyday work would have frightened the workman of 50 years back. His responsibilities are increasing, and all the way round his duties are more arduous.

While the younger man may object to this the older plumber looks at the change in a broader light, and sees that all this extra responsibility is a good thing for the plumbing industry. It elevates the plane of the industry, it raises the status of the plumber, it transforms him for from a mere worker of lead into an engineer, and a very important one too. All this, however, means that the knowledge of the plumber both theoretical and practical must be largely in advance of former years, and there is no slackening off in the movement. Qualifications for master plumbers are getting very high, while by-laws generally are more exacting. In fact to pass some of the regulations now in force in various cities on the American continent the young plumber has to be an engineer and a business man all in one.

For instance in the city of St. Paul, Minn., the plumbing board has made a ruling that in order to qualify as a master plumber the applicant must pass an examination as to his ability as a journeyman, must be able to prepare plans of plumbing work, and must be able to estimate on the plumbing in a building from the plans and specifications. This is a very severe law, but if carried out it will not only mean a more highly qualified class of plumber, but it will do away with the great downfall of the present master plumber—their inability to estimate properly so that a sufficient profit is put upon the work done.

Looking at this regulation as an educational factor there is no doubt that if every city passed a similar law there would be a great lift up in the knowledge of the Master Plumber, and certainly less work would be contracted for where the plumber forgets all about his overhead expenses and incidentals and figures on a flat profit of 10 per cent. and even less.

The man who does not look ahead will not be inclined to welcome regulations whereby his responsibilities are increased, and the qualifications rendered all the more hard. But if the status of the plumber is to be up-lifted then this is the only possible way. Besides the great fault of the plumber of to-day is that he is not a business man. The young plumber should be shown how a business must be conducted. One of these days it is to be hoped that there will be a chain of schools throughout the country where the young man can learn estimating, contracting and designing, as well as practical work. But until that time comes the only methods at the disposal of the young plumber is study on his own account. He must be prepared to sacrifice some of the time that he has usually given in the evenings to other amusements. It is hard, we know, to come home from a heavy day's work to have to set in and work out problems in estimating, contracting and designing, but the result is well worth the labor. It means that the young man starts right in where his master leaves off ; it means he is fully in a position to take hold of the growing onerous work that the public is now throwing upon him ; and it means that there is not that danger of setting up in business only to fail because of an absence of knowledge of how to run it properly.

It is astonishing how soon one becomes accustomed to study and how work at one time seeming so laborious becomes comparatively easy. It is simply a question of habit. If a young fellow gets into the custom of picking up a text book instead of the evening paper he soon loses that feeling of drudgery and reluctance that he had before.

It is up to the young plumber what standing he wishes to take in his industry, and the man who is prepared to devote some of his spare time in the evening to study will go very much further than the one who, when the day's work is over, throws aside all thoughts of the future, and is simply content to have a good time.

COOPER, SHANNON & CO.

It seems to be easier for some people to knock than boost and the plumbing and heating trade has its share of knockers.

Because George Cooper, the new president of the N.A.M.P., isn't rated at $100,000 in Bradstreets, and because R. J. Shannon, vice-president for Ontario, has only been a master plumber for three or four years, the voice of the knocker is heard as an echo of the convention held in Toronto a month ago, sneering references being made to "Cooper, Shannon & Co."

Let it be said here and now that the two officers mentioned fully earned the honors given them at the re-

cent convention. Many delegates from outside Toronto attended the convention with the determination to choose a president from an outside city, but they could not help but recognize the valuable work done by Vice-President Cooper and no other name was mentioned for the executive chair. And the attendance of half a hundred delegates from Ontario cities and towns was a token of the success of Vice-president Shannon's work during the past year.

The Plumber and Steamfitter has no axe to grind. It believes in trade organization and knowing the conditions existing in the plumbing and heating trade it has every respect for those who devote time and energy in an effort to improve conditions. And it has mighty little sympathy for the fellows who sit back and pick holes in the men who are in the lime-light because they are workers.

The present officers of the N. A. M. P. will be glad to turn over the responsibilities of office to others who are willing to undertake the labor for the benefit of the trade, so it is up to the knockers in the ranks and those who sow seeds of discord from town to town to turn to and do something themselves. Be boosters instead of knockers, and you will think more of yourselves and others will think more of you.

OFFICIAL NEWS

N. A. M. P. & S. F. of CANADA

OFFICERS 1910-11

President — G. H. Cooper, Toronto.
Vice-president — J. E. Walsh, Montreal.
Treasurer — E. D. Higginbotham, Fort William.
Secretary — Lewis Legrow, 50½ Harbord St., Toronto.

Provincial Vice-presidents:—Nova Scotia, Frank Dexter, Truro; New Brunswick, G. E. Blake, St. John; Quebec, H. W. Munday, Montreal; Ontario, R. J. Shannon, Toronto; Manitoba, R. Thomson, Winnipeg; Saskatchewan, A. D. Henrich, Moose Jaw; Alberta, E. J. Young, Calgary; British Columbia, R. C. Hodgsont Vancouver.

Chairmen of Committees:—Legislative, H. A. Knox, Ottawa; Sanitary, Geo. Ross, Brockville; Apprenticeship, Jas. Griffin, Montreal; Essay, J. E. Farrell, North Bay.

Provincial Convention will be held at Toronto, Thanksgiving Day, Monday, October 31, 1910.

Next National Convention will be held at Port Arthur and For William about June 1, 1911.

AN EXAMINATION SYSTEM REQUIRED.

One of the first results of the National Convention a fornight ago was the receipt of a letter by President-elect Cooper from the mayor of a large Northern Ontario town asking for information which would assist in putting plumbing work in his town on a higher standard. The letter follows:

> Dear Sir.—I find that a lot of plumbers are putting in work in this town, and in fact in all towns in Northern Ontario, who are not qualified to do the work.
>
> I do not need to tell you what the consequences of this will be, and while I do not know what they do in other towns and cities, yet I have resolved to make these fellows pass some kind of an examination, as a test of their fitness.
>
> We have a pretty fair man as Plumbing In spector here, and even if I have to import a capable examiner, I have determined absolutely not to permit bum plumbers to charge people money for plumbing, which is not up to the standard, with its consequent disease producing effect and so on.
>
> Now can you tell me if this has ever been carried into effect in small towns, as doubtless, surely it has been done in cities, and if so, where I can obtain a set of examination papers formerly used, and what you personally think of the idea.
>
> Yours very truly.

The desired information will be supplied, and as the mayor's letter indicates that he is both a man of ideas and action it is probable that his town will take the lead in requiring all plumbers, both masters and journeymen, to pass an examination before doing the work there.

R. C. HODGSON, Vancouver.
The New Vice-President for British Columbia in the Canadian N. A. M. P.

STRIKE IN MONTREAL.

The plumbing trade in Montreal is being disturbed by a strike on the part of the Plumbers' Union, several hundred men being affected. This is especially unfortunate now as trading prospects are exceedingly good, and plenty of work seems to be offering. It is to be hoped therefore in the interests of all that a satisfactory settlement will soon be arrived at, and trade harmony restored, so that every man, whether journeyman or boss, can secure the best results out of the present good conditions of work all the way round.

The chief conditions asked for by the Union are a minimum wage of 40 cents for this year, 42½ for next year, and 45c for the following year, the observance of the closed shop as long as there are union plumbers to take vacant positions, and the eight hours day. Other conditions deal with the apprentice question and providing for higher rates of pay for overtime and holiday work.

The Master Plumbers' Association have decided not to agree to these terms, especially declaring against the closed shop, believing that they are doing so in the best interests of all.

Several firms have agreed to the terms of the men, but the Master Plumbers' Association practically stands firm in the attitude taken up not to accede to the requests of the men, and so the deadlock is being continued.

Ald. O'Connell, a prominent Montreal plumber, has appealed to the mayor to exercise his influence in ending the disagreement, and the latter has expressed his willngness to do anything in his power to restore peace.

It is to be trusted that the trouble will be shortly settled to the satisfaction of both sides.

THE EVOLUTION and SIMPLIFICATION of PLUMBING

by Herbert Francis Shade
VICTORIA, B.C.

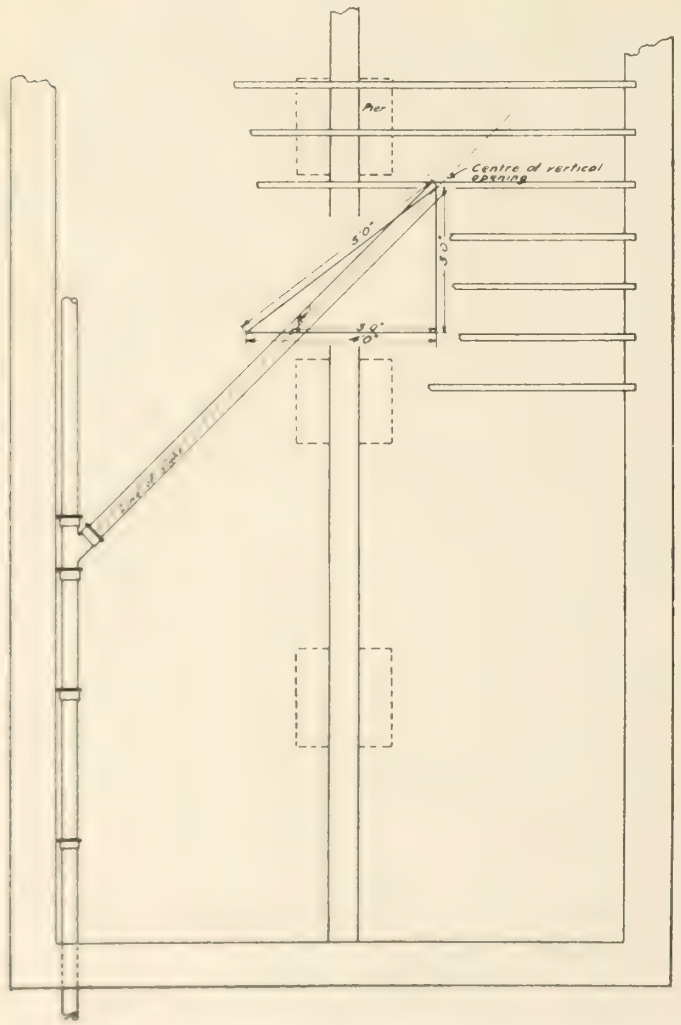
[Written for publication in the Plumber and Steamfitter of Canada and Registered in accordance with the Canadian Copyright Act.]

Third Article. Others published January 1 and February 15, 1910.

Apart from the question of the trap on the main drain, the horizontal piping from the point of entrance of the premises, whether within or without the building is called the "main drain." In residence work, or where the building does not cover all the plot of ground, this pipe is sometimes of salt glazed earthenware, and is carried on past the foundation wall and connects with the various branches from the vertical lines of soil and waste pipes, from the fixtures within the building.

There seems to be no reasonable objection to this class of work, provided, as herein illustrated, that the bottom of this vitrified drain is not above the level of the basement floor of the building adjacent to it, for the reason of the more possible liklihood of seepage into the cellar by leaky cement joints in vitrified pipe lines, than in cast iron. In modern practice and more particularly where the depth of the basement of any building is lower than the depth of this main drain, a cast iron pipe should be carried within the foundation walls of the building, and where no fixtures are required in the basement it is usually hung from the joists by proper hangers. The most direct line to take care of the vertical soil and waste pipes is now established, and in order to obtain perfect alignment of this main drain and its branches, the point of entrance through the front wall, or that nearest the main sewer is ascertained, and a nail is driven into the wall at a point where the bottom of the drain will lie. The next point to be found is the farthest opening for some soil or waste line from the point of entrance, such that the line between these points will not interfere with the headroom or door openings of the basement. When this is determined and the distance measured a uniform grade is struck, which is usually 2½ feet fall in every hundred feet of run, and a line is strung between these points and temporary wooden hangers placed next to this line, so distanced that they will not interfere with the hubs of the pipe line. Double lengths of pipe already caulked together are now placed on the hangers and carefully caulked together and lined up, and the necessary branches left off for the different vertical lines.

The branches on horizontal lines should always meet the main line at an angle of not more than 45 degrees by using a full Y fitting, and where right



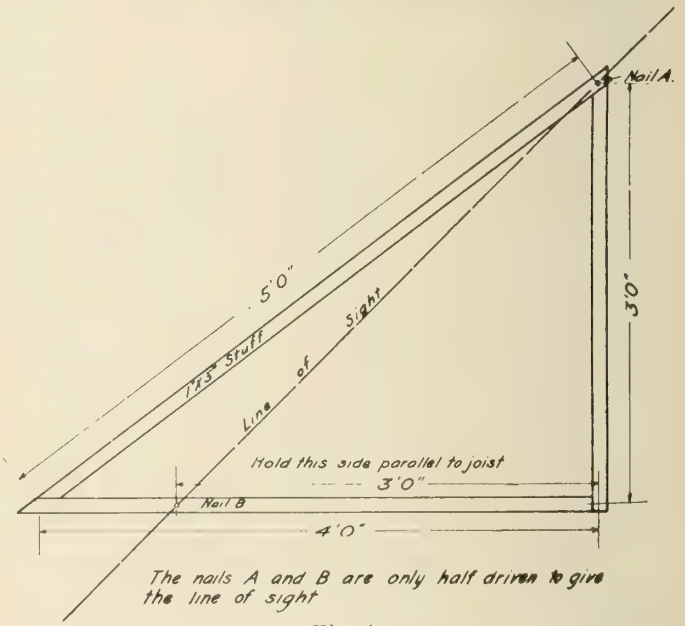


Fig. 1.

angle turns are necessary by Y's and one eight bends. Sanitary tees should never be used for branches on horizontal pipe runs.

Where these branch runs are of some length and where it is desirable for the

branch to run at an angle of 45 degrees from the main drain, and to strike the proper position of this Y branch on the main line, lay out a temporary wood square of a size as large as can be handled conveniently by the 3, 4, 5 method Fig. 1, and by holding the side of the square parallel to the building with the point A under the vertical opening and sighting over the nails B and C the proper position for the Y on the main line is easily found. It is sometimes necessary, in order to avoid structural difficulties such as piers, chimneys, etc., that these branches meet the main drain at an angle of 60 degrees by using a Y fitting and one-sixteenth bend, and in order to do this it is necessary to lay out on this square the angle required, and the same method of sighting the position of this fitting on the main drain is carried out.

In order to obtain first-class work the hub and spigot of all joints must meet each other in as true a line as possible and the importance of this cannot be too greatly enlarged upon. Apart from the impractical appearance of poor jointing, the fact remains that when a joint does not look mechanical the interior bore is decreased and additional friction is added, which all tend to destroy the essential features of the removal of sewage by water carriage.

If we assume the following discharges from fixtures at baths 35 gallons W. C. 3½ gallons, slopsinks 2 gallons, we find that a 4 inch pipe with a slope of one in forty is capable of handling the simultaneous discharge of 4 baths, 8 W. C., and 4 basins, and the improbability of such an occurrence even in large works makes the following table ample for the relative size of pipe of different works. The table is given in water closet equivalants, one water closet being equal to three small fixtures.

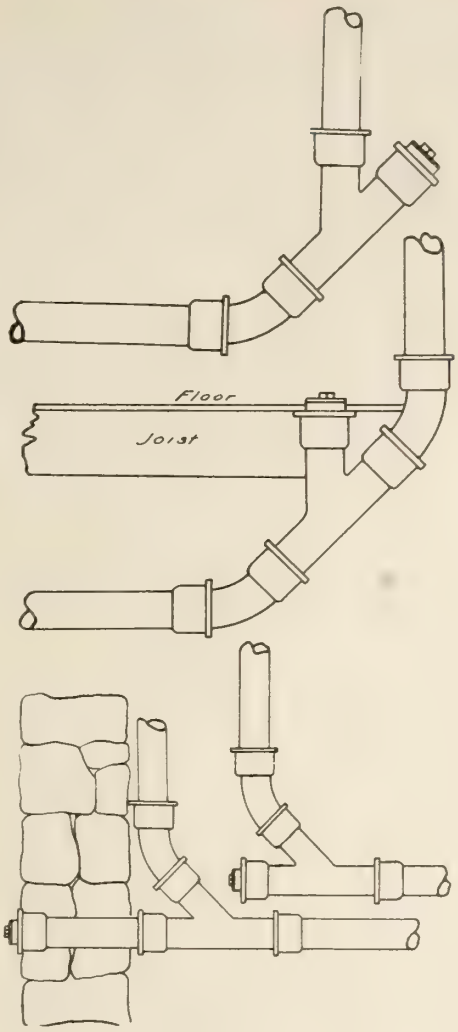
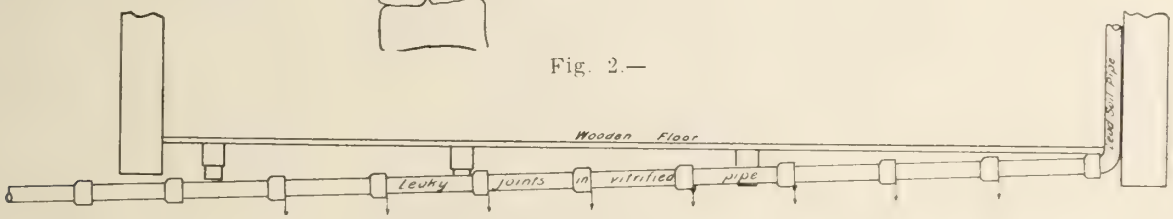


Fig. 2.—

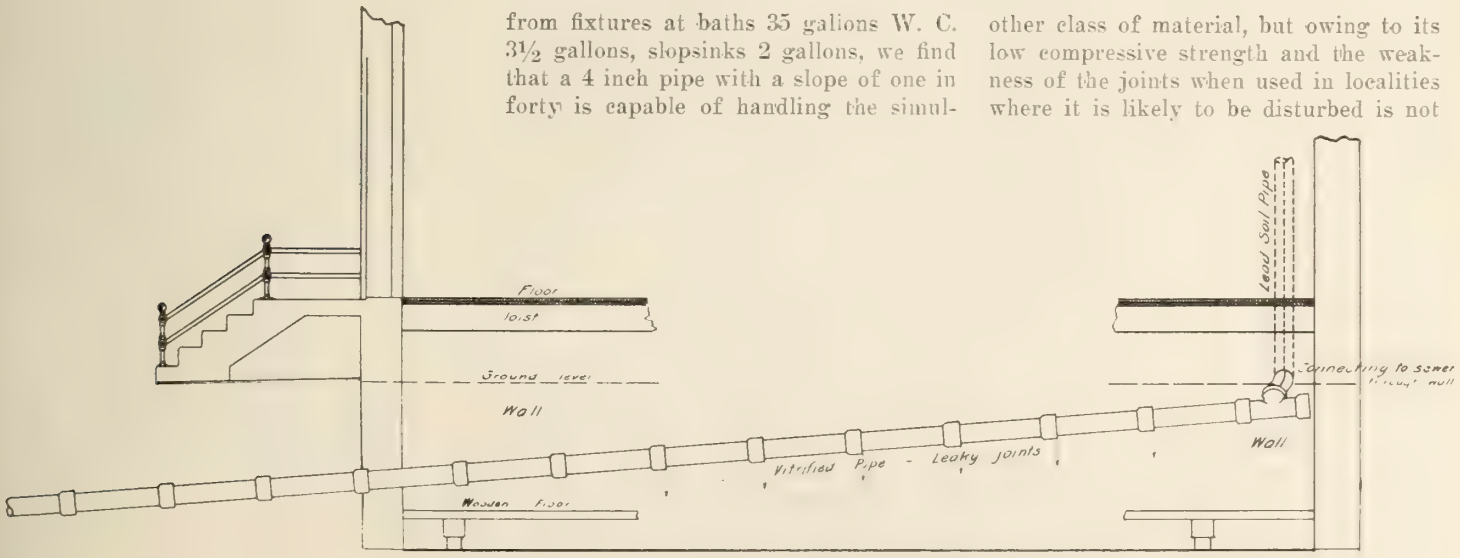
At the end of all main drains and horizontal branches of same, of over ten feet in length, proper inspections or cleanouts should be provided and all such cleanouts should be closed up with a proper cap with a washer seal of some imperishable material, or with bolts so that it can be easily made perfectly tight. (See Fig. 2.) In many instances in building construction the cleanout cannot be left at the end of horizontal runs, owing to obstructions, which would make it of little practical value, and the illustration herein provided shows how such difficulties are overcome.

The method of constructing vitrified earthenware main drains and its branches under the cellar floor, and within the building is now almost universally condemned, still it is astonishing to note at this writing that in some of our principal cities in Canada the authorities permit this inferior class of work to be carried on, but it must not be here understood that for some classes of construction it has not higher sanitary value than any other class of material, but owing to its low compressive strength and the weakness of the joints when used in localities where it is likely to be disturbed is not



Section showing vitrified sewer pipe laid under cellar floor

Fig. 3.



Section showing evils of vitrified pipe laid outside foundation wall but above level of basement floor

Fig. 4.

the character of material to be used within the walls of any building.

In the earlier methods of main drain construction, vitrified pipe was almost the only material used, and we find that these drains were most generally carried beneath the basement floor, which floor was at that time invariably of wood; and it is a matter of easy recollection for those who have followed the plumbing business for the past 20 years, to note the weakness of this class of work. In the writer's experience I have found many cases where the space between the floor and the ground has been filled with decomposed sewage by leaky joints and holes made in vitrified drains by amateurs to relieve stoppages, etc. The blame of these occurrences must not altogether be put to amateurs, for many practical plumbers who through carelessness and in order to quickly relieve a situation, cut holes in vitrified drains, which course would be unnecessary if a little time and care was applied. The sketch here produced (Fig. 3) shows an instance of vitrified drains beneath cellar floors.

To illustrate further the weakness of running vitrified drains parallel and adjacent to the building and at a level higher than that of the cellar floor, it is shown that, the basement being lower than the greater part of the pipe line, in the case of any leakage through joints, etc., the natural discharge for such leakage is into the cellar. While this leakage might not be of such quantity that it would show, still a very insanitary condition could exist without much appearance of dampness. (Fig. 4.)

The method of cast iron construction as herein described whether below or above the cellar floor is the only safe, modern and practical method, as it is almost entirely free from the weaknesses of the other methods, and when within the cellar walls any defects are readily seen and repaired immediately, while in the use of vitrified pipe a dangerous condition might remain for considerable time, or until the premises become insanitary to such an extent that the inhabitants become alarmed.

To arrive at the proper size and slope of main drains and their branches several important factors are to be taken into consideration, viz.:—

(a) A velocity and depth of flow that will be self-cleansing.

(b) That the maximum discharge not fill the drain more than three-fifths full.

(c) That the pipe should be small enough that the normal flow will give a depth of water carriage sufficient to float and carry off the faecal matter with one flush.

The maximum flow in drains is only ascertained by the possibility of the greatest number of fixtures wasting into the line at one time, and if we apply the well known formula with a given velocity of 4½ feet per second we find the following discharges for different sizes of pipes:

Table No. 1.

Size of pipe.	Slope.	Dis. in imp. gals. per minute.
4 inches	1 in 40 or 2½ per cent.	147.8
5 inches	1 in 50 or 2 per cent.	239.4
6 inches	1 in 60 or 1.66 per cent.	331.8
7 inches	1 in 70 or 1.42 per cent.	451.7
8 inches	1 in 80 or 1.25 per cent.	592.5

$$\text{Discharge in imperial gallons equal} = \frac{\text{area of pipe in inches x velocity in inches}}{\text{Cub. inches in imp. gallons.}}$$

Table No. 2.

Size of pipe.	Branch or horizontal.	Main or vertical.
	Soil Pipes.	
4 inches	12 or less	25 or less
5 inches	24 or less	50 or less
6 inches	50 or less	100 or less
	Waste Pipes.	
1½ inch lead pipe	1	1
2 inches C.I.P.	5 or less	10 or less
3 inches C.I.P.	15 or less	30 or less
4 inches C.I.P.	35 or less	75 or less

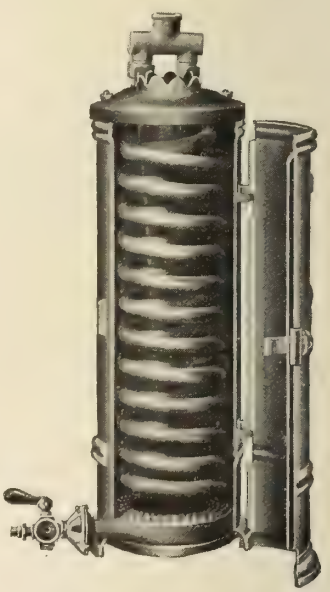
HUMIDITY IN FACTORIES.

Humidity regulations have been made the subject of a law passed in Massachusetts in connection with the regulations for the operation of factories and work shops. It is stipulated that weaving and spinning departments of textile factories, where water is used for humidifying, must be equipped with at least one set of standardized wet and dry bulb thermometers. These must be read and reported three times a day and must conform to an established standard percentage of relative humidity. Certain factories may be excepted at the discretion of the state health inspectors. Water used for humidifying must not be dangerous to the health of employes.

At least one hygrometer must be provided in each room, and possibly two, if so ordered by the factory inspector. These are to be placed so as to be plainly visible to the operatives. As already stated, there shall be at least three readings taken per day. These are to be preserved on forms provided by the State Board of Health and shall not be destroyed until seen by the factory inspector. Of course, such forms are unnecessary if automatic hygrometers are employed, or if the practice is to use a sling hygrometer, providing the records taken from these are not destroyed, but are preserved for the factory inspector. It is understood that the upper and lower range of relative humidity are to be mutually agreed upon by the labor unions and the textile mill owners. It is possible that the stipulation of the humidity may be expressed by requiring that the wet bulb thermometer shall always read a definite number of degrees less than the dry bulb. Whether humidification apparatus which uses the water over and over again will always be acceptable, on the ground that the condition of the water may not be regarded as complying with the law, is perhaps an open question.

NEW GAS WATER HEATER

The Hoffman Heater Co., Loraine, O., has introduced something new in a tank heater, which has a double copper coil heater, with union nut connections on each coil. This is the only double coil tank heater on the market with independent connections, the use of which permits the removal of either coil, without interfering with the other coil. This heater is considered to be the strongest and most efficient tank heater on the market.



New Gas Water Heater.

The Plumbing Business

As long as the plumber clings to his traps, tubs, pipes and wrenches with a mind rising no higher than the mechanical details of his trade, he will be merely a "plumber." This series of articles will deal more particularly with the business end and readers should derive benefit from reading them.

Written for the Plumber and Steamfitter by Charles H. Denison.

Chapter V.

To carry out an undertaking a man must have resources. They may be mentioned as physical, mental and financial resources. One's strength may not be up to standard, the mental training may be somewhat below the average but the financial part must be sure in these days. Time was when most any workman could put in a few fittings, a little pipe and a few sinks and make it go. Those days are passed and the party who starts without a good "grub stake" will get lost in the discard.

How much money will be required ? I hear some one ask.That has several qualifications, such as the amount and character of business to be done. Also the size of the city or town where you are starting. These will have to be taken into consideration at the time. Take up almost any trade paper and look over the lists of new firms. That is a fairly good guide.

You will be very much surprised at the small number that start with $3,-000 or less. On the other hand you will see many who begin with $5,000 to $10,-000 and more. Think of the stock to be carried, the rent to be paid, the wages to be settled each week and your own living, which must come and the possibility that it may be several months before you get the stream of money started coming your way and you will come to the conclusion that about $5,000 is plenty little to start in with. I do not say that it can't be done on less, but I do say that success may be a long time coming and may forget entirely to arrive.

Ability the Greatest Asset.

Among the resources that will, in time, come to a man in business is that of a good name ; the name for doing first class, honorable work. This is one of the greatest business getters that can be acquired and all efforts should be directed to attain this end. The greatest compliment a man in business can have is to get jobs at higher figures than those of his competitors. Can it be, did such a thing ever happen, and still on the square, I hear you say ? It does happen, though not so frequently as might be desired, I must admit.

One need not, of necessity, possess the absolute cash, saved for the occasion. Credit may be obtained on property and sometimes a party can be found who will risk a certain amount of capital against one's practical experience. There are various ways to come through. When a man goes "prospecting," he carries along enough to last him at least six months or a year. That example should be suggestive to our would-be master.

In estimating what it actually costs you to do business at the start, one will be at a loss for the reason that no business has yet been done and to tell, for a dead sure thing, just what this will amount to, a year's time will have elapsed before it can be found exactly. In the meantime you have got to add some certain per cent. to cover this item of expense. It differs of course with various people and circumstances. Some claim that 15 per cent. is all right while others state that a man can not get out for less than 25 per cent.

In order to be entirely upon the safe side I believe that a man new in the field of our business should add 20 per cent. the first year, and at the end of the twelve months if he finds that the per cent. is too large, he can, if he wishes, reduce it, when he finds out where he is at and is perfectly sure of what he is doing. It would be the height of folly to assume that 10 per cent. added would cover this item of expense. No one has yet succeeded in making it work down to this low percentage, so do not be foolish enough to assume that you can do what smarter men have lost out upon.

Points for Consideration.

A proposition that now comes up for very serious consideration is the buying end of the business. Here are some points to think over :

1. What stock and how much shall I put in the show room and window ?
2. What per cent. of the capital shall I tie up in stock in the business ?
3. Shall I give all the business to one jobber ?
4. Shall I discount the bills ?
5. Shall I load up on every old bargain sale that is offered ?

Answering question one I should say that you could not do better than to look over a dozen or more of the back numbers of one or two trade papers. There you will find illustrated various show rooms and front windows of some very successful men in the business. These windows speak plainer than words and you can figure the thing out for yourself and place the stock on show according to your financial condition, guided by your judgment of local conditions. I would not load up too heavy at first, but I would try and show a good variety of articles.

The per cent. of capital tied up in the business will have to be decided as you progress. It will depend upon how much business you do and how quickly you can turn the stock. Some parts of it will go more rapidly than others. Here, again, I would not load up at the start.

Avoid "Hand to Mouth" Buying.

On the contrary you can not afford to buy in a hand to mouth way for each job, after you once get going, for if you depend upon this policy you will very likely get well "stuck" some time when you are tied up on a large job and the prices suddenly advance. I have known several men in the business who thought that they could beat the game in this manner and they invariably got caught sooner or later.

As to giving all the business to one jobber there are various opinions. Some think that by dividing the business and making the jobbers believe that you will drop them at any time, that you can get better prices. Others say that a first class house will always do the right thing and if they hold your trade, it is an easy matter to obtain a little time on goods, if it ever should become necessary, and the chances are that it will in three cases out of five. A man has the right to do the best he can for himself, but on the other hand he wants to be sure that he has the backing to make him perfectly independent. It is a pro-

(Continued on page 13.)

Operation of the Webster System of Steam Heating

The Use of Exhaust Steam for Heating—History of the Development of the Webster System and its Applications—Paper Read by R. Dawson Before a Meeting of Steam Engineers in Toronto.

Steam, after being employed in an engine for developing power, retains the greater portion of its heat. If not condensed or otherwise utilized, it can be employed for heating without materially affecting the power of the engine. There are systems of steam heating in which the water of condensation flows directly into the boiler, by gravity. In other systems in use, high pressure steam is carried in the boilers, high or low pressure steam in the heating main and radiators, and the return water of condensation is received by a trap, or a pump and receiver, from which it is forced back into the boiler, or in some instances is wasted.

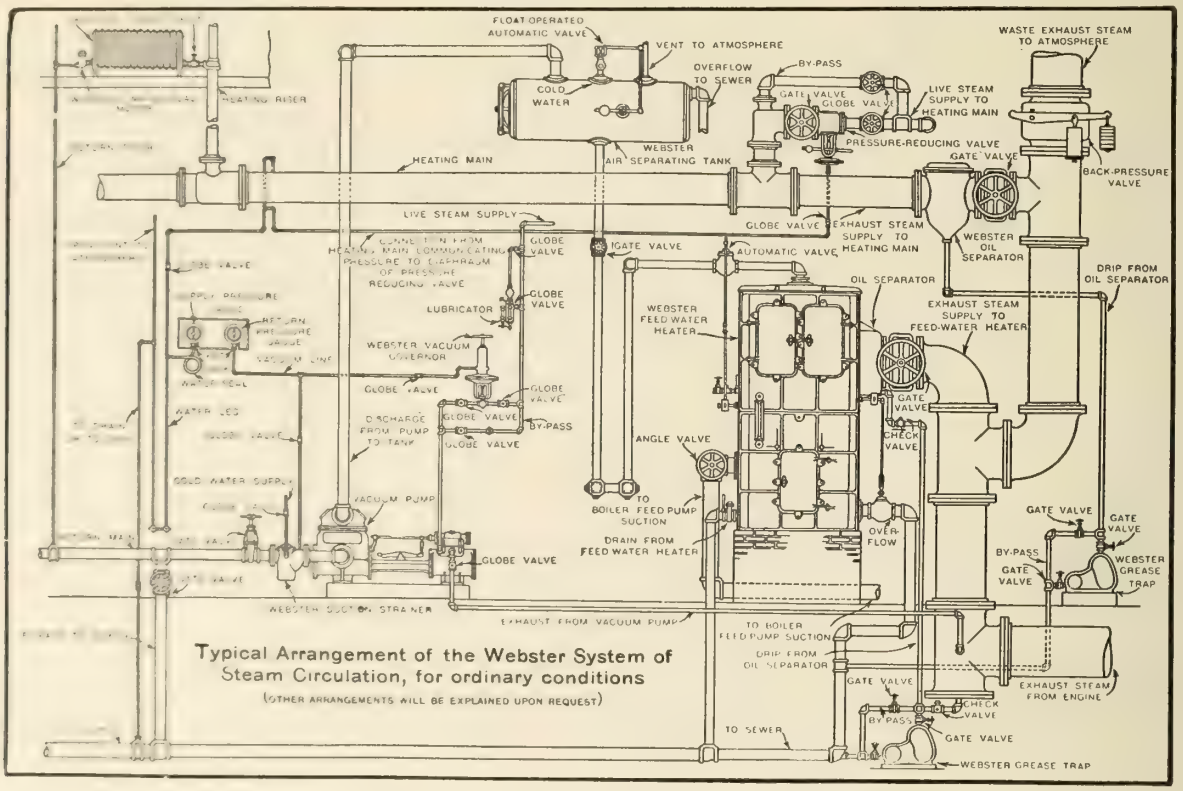
In using exhaust steam for heating, quite frequently there is insufficient steam derived from the engine exhaust to completely warm an extensive heating system. In these cases it may be necessary to supplement the exhaust steam available by live steam taken directly from the boilers, which may be reduced in pressure to that of the exhaust steam by passing it through a valve partly open, or a pressure reducing valve.

Up till recent years, but little attempt was made to utilize the heat escaping in the exhaust steam from a non-condensing engine, and consequently there was, a good opportunity for the construction of a system which would save annually many times its first cost.

The exhaust steam discharged from a non-condensing engine contains from 20 per cent. to 30 per cent. of water, and considerable oil and greasy matter, which have been employed in lubricating the cylinder. When the engine is freely exhausting into the air, the pressure in the exhaust pipe is, or should be, a little in excess to that of the atmosphere. The effect of passing exhaust steam through heating pipe tends to increase the resistance and cause a back-pressure, which will reduce the effective work of the engine. The engine delivers steam intermittently, but at regular intervals at the end of each stroke. This amount of steam is likely to vary with the work done by the engine, since the engine governor is always adjusted to admit steam in such amount as is required to preserve uniform speed. If the work is light, very little steam will be admitted to the engine. For this reason, the supply available for heating varies by wide limits.

The general requirements for a successful system of exhaust steam heating are: First, the arrangement of a system of piping having such proportions as will make little or no increase in back-pressure on the engine, and will provide for using an intermittent supply of steam. Second, provision for removing the oil from the exhaust, since this will interfere materially with the capacity of the radiating surface, and is also dangerous to the boilers. Third, provision against accident by use of a safety or back-pressure valve at some point in the exhaust pipe, so arranged as to prevent damage to the engine by a sudden increase in the back pressure.

Any system of piping may be adopted in connection with steam heating, but extreme care should be taken in connection with exhaust steam heating systems, so that as little resistance as possible is made to the free flow and circulation of the steam. The radiating surface employed should be such as to give the freest posible circulation. In general, the system which will be preferable, is that in which the main steam pipe is carried directly to the top of the building, and the distributing pipes run from that point, and the radiating surface is supplied by a system of down-flowing risers, which are properly dripped



at the bottom, so as to remove all water of condensation that may be caused in the circulation.

The size of exhaust pipe required for an engine of of given power in order that the back pressure shall not exceed a certain amount may easily be computed. The only data required will be the amount of steam that is discharged from the engine. This amount will depend on the workmanship and class to which the engine belongs, but we can assume with little error, that non-condensing engine will require about 40 lbs. of steam per horse power per hour. It is quite true that there are engines of the Corliss or other approved type, which may not require more than 25 to 30 lbs. of steam to the horse power hour; but in order that the pipes may be sufficiently large, it is better to proportion the system from the most uneconomical standpoint, so that there will be no possibility of these exhaust pipes being too small, for any type of engine. We might now give you carefully computed table of the sizes of pipes that are necessary to conduct a certain amount of steam, a certain length at a certain velocity, but as this information is given accurately in most text books upon the subject, we see no reason why we need go into this matter in detail at this point.

Under ordinary conditions, the pressure in the exhaust pipe of an engine, is slightly above the atmospheric pressure, when it is exhausting directly into the air. But systems have been used with considerable success in which the pressure in the exhaust pipe and heating system was less than atmospheric pressure.

Atmospheric Pressure.

Such a system can be constructed by connecting the returns from the heating system to an air-pump, which will remove the water of condensation, and to a great extent the atmospheric pressure. The heating surface in this case will act as a condenser on the steam from the engine. In the case of it being insufficient for the purpose of condensing the steam, a jet or surface condenser supplied with cold water may be used to supplement it. This is practically using a heating system as a gigantic condenser, and this might be termed the first vacuum system that was evolved. In fact the original idea of using a heating system as a condenser was the beginning of a series of experiments, which we might say have led to the now-widely used system of exhaust steam heating known to the vacuum system. But on account of various difficulties that were met with in these experiments it was soon found that it was necessary to devise other arangements so as to procure the various conditions that are required in order to make the system operative under the varying circumstances. In any system of exhaust heating, a by-pass connection to the outside air must be provided, so that if the heating surface in warm weather does not condense all the steam that is furnished by the engine, it may have free access to the atmosphere, so as not to cause undue back pressure in the piping. Of course, in cases where a condenser is used, the condenser could be made use of to handle what steam there was in excess of that required for heating.

Besides the general system which we have described, other systems of great merit have been devised and put on the market, with many special and patented features. Of these, we may mention first the Williames system, which we may say was the first practical application of a vacuum system of heating. In this system the exhaust from the engine is received into a large upright stand pipe, with back pressure valve at the top. The steam for heating is drawn from near the top and after passing through the radiating surface, is received into a large branch tee, which is supplied with injection water and serves as a condenser. The suction pipe of an air pump is connected to the branch tee, and acts to remove the atmospheric pressure from the entire system. A by-pass for summer use is provided. In the original design of this system, provision was made for heating water in a closed hot-water tank, by a portion of the return piping, which water could be used for any purpose needed, as for instance, feeding the boilers or providing hot water for any other purpose. In this system, as we have stated, a back-pressure valve in employed at the top of the main exhaust pipe. This valve is constructed like a check valve opening outward, but is provided with removable or adjustable weights, for the purpose of balancing it at any desired pressure. It is adjusted to open and discharge the steam when the pressure exceeds any desired amount, and to close when the pressure falls. It is almost universally employed to discharge the excess of steam in connection with any system of exhaust heating as already stated. When the steam supplied is not greater than can be condensed and removed in the form of water by the vacuum pump or exhausting device, a vacuum will be produced throughout the entire system and will even extend to the engine. The temperature in the radiators will be less than the boiling point of water and dependent upon the amount of vacuum. When the steam supplied is in excess of that which is condensed, the back pressure valve will open intermittently for a short period of time. The pressure in the main exhaust will be about that of the atmosphere, and the temperature will be 212 degrees Fahrenheit. The exhausting revice will, however, for this condition draw the steam and water of condensation, and the entrained air through the radiators and coils, and may produce a considerable vacuum throughout the entire heating system, which may begin at a point near the exhaust pipe, or position of restricted supply.

Webster System.

The Williames system was patented by M. P. Williames, April 4, 1882, and some of the claims of the patent were sustained by decision in the United States Circuit Court in 1890, in the case of Williames vs. Barnhard, and by the Circuit Court of Appeal in 1899, in the case of McNeelly vs. Williames; this is interesting as being the fundamental patent granted in the United States for circulating steam positively without material condensation through a heating system by means of a suction device or exhauster connected to the return pipe. The Webster system was the immediate successor commercially to the Williames system, and is now extensively used. The Webster system is a higher development of the Williames system, and was promoted originally and is still by Warren Webster. The first patent in connection with the Webster system was obtained January 24, 1893, and since that time, Warren Webster has taken out over ninety patents in the United States covering Webster heating appliances, and their allied specialties. These patents cover as well as heating apparatus, such specialties as feed-water heaters, grease extractors, drying apparatus, filters and purifiers, as well as air washers and humidifiers and various other steam and water appliances that have relation to the problem of heating. In addition to these ninety patents, Warren Webster has been granted eleven trademarks, covering the Webster specialties as well as patents which fully protect his rights in foreign countries, covering practically the same claims as are covered in the United States by the ninety patents above referred to. Warren Webster has recently taken out several patents covering other heating apparatus in connection with the Webster modulation system, and there are now forty-five patents pending in the United States, which have been applied for. We just mention this, as it is interesting as evidence of the extent to which Warren Webster has devoted his attention to perfecting his system, and we believe to-day he has produced the highest development of this department of engineering, and as a result the Webster System is admitted by those experts most qualified to judge to be the latest embodiment of scientific knowledge in the art of heating.

Exhaust Steam.

There is an erroneous notion that live steam is better adapted to heating than exhaust. It has been demonstrated that exhaust steam when rid of its entrained oil and water, by passing it through a separator is in every way suited to the requirements of a steam heating system.

While the heat given off by high pressure steam per square foot of direct radiation is greater than with low, owing to the greater difference in temperature, between the steam inside the radiator and the outside air, an inspection of any table showing the properties of saturated steam, show that pound for pound exhaust steam has a greater heating power when condensed to water at the steam temperature than has live steam at much higher pressures.

A point that has only recently been brought out and is of interest in this connection; is, that low pressure heating appears to be more efficient than high. In a paper read by H. O. Lacount, at a meeting of the American Society of Mechanical Engineers , in May, 1907, results of tests were given, which show that the fuel cost for heating a given space by low pressure steam was less than that where steam at a relatively high pressure was used. The greater economy in heating secured by the use of low-pressure steam as a heating medium is no doubt in a large measure due to the fact, as pointed out several years ago by Prof. J. H. Kinealy, that a radiator at a high temperature keeps the air near the top of the room, at a much higher temperature than when the radiator is filled with steam at a low pressure, and is not so hot. He says, "the higher the temperature of the air at the ceiling of the room, the higher will be the average temperature of the air in contact with the cooling windows and walls of the building, and hence the greater will be the amount of heat transmitted through the cooling walls and windows per hour. That system of heating must undoubtedly be the best and most economical which will maintain the desired temperature of the room nearly uniform from the floor to five feet above it, with a low temperature in the upper part of the room, and this he thinks is done by radiators supplied by steam at a low temperature."

Furthermore, since radiators and coils are commonly placed near the outside walls, it follows that the loss of heat by transmission through these walls, must be greater with high pressure steam than with low.

R. P. Bolton, in a paper read by the American Society of Heating and Ventilating Engineers, mentions the following primary requirements for an effective exhaust steam heating system:

1. Absence of back-pressure on the motive engine, so that they can be designed for the highest economy and work under designed conditions. Effective drainage of condensation from the system of supply pipe, prior to the entry of the steam to the radiating surface.

2. Effective drainage of condensation from the interior heating surfaces, as and when accumulated.

3. Continuous removal of air and its contained moisture from all confined spaces, without retarding the removal of moisture.

4. Removal of water and air from some distance below the line of gavity drainage. These should be accompanied by:

5. A variable capacity of removal adjustable to the extent of use of the heating surfaces, resulting in:

6. Regulation of temperature in separate radiating surfaces.

Mr. Bolton also states as follows:—

"It will readily be observed that the requirements above recited are not fulfilled by any system employing one pipe for a supply of steam, and for the return of condensation, nor by any system which removes only the air gases, and does not deal with equal certainty with the waters of condensation, nor by any arrangements, establishing a partial suction in the coils or radiators in such a way as to act in opposition to the free drainage of condensation, nor by any apparatus requiring more than one hand valve for the regulation by unskilled persons of a coil or radiator, nor any system incapable of lifting the condensation from a point somewhat lower than the outlet or final disposition."

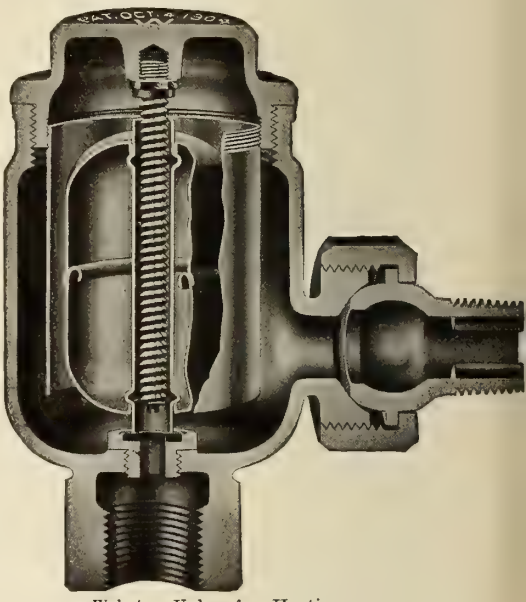
Engineers agree that the Webster System fulfils all the requirements as called for by Mr. Bolton.

Webster System Explained.

Taking up in the order stated by Mr. Bolton, the primary requirements of an effective exhaust steam heating system, we come first to the question of back-pressure. Accumulation of air and water in pipe and radiators combines to interfere with the free passage of exhaust steam, necessitating the carrying of back pressure unless these are removed by mechanical means. The vacuum pump of the Webster System combined with the other special appliances accomplish the removal of air and water in the pipes and also facilitate the passage of the steam.

Back-pressure systems always require pressure in the radiators above that of the atmosphere, in order to expel the air that is already in the radiators, regardless of the frictional resistance of the piping, or the extent of the system. A back-pressure valve, provided with removable and adjustable weights for the purpose of creating required resistance to the flow of the steam is placed upon the outlet to the atmosphere, and is capable of being so loaded as to impose upon the engines or pumps a back pressure sufficient to impart the necessary velocity to the steam to cause it to flow to the mains and branches and into the radiators and coils at sufficient pressure to force out the air and gases.

Much has been written in regard to the uneconomical effect of back pressure on engines and pump cylinders. The actual operation can be readily appreciated by any one familiar with the expansion of steam within these cylinders. At whatever points the initial pressure and back pressure stand the disadvantage of the latter is relative not to the former, but to the mean effective or average pressure above the atmosphere on the power side of the piston.



Webster Valve for Heating.

The necessary back pressure must vary considerably with local conditions, increasing as the distance it is required to force the steam increases. It is due not only to the friction of the supply main, but also to the necessity for maintaining in all the radiators a pressure above that of the atmosphere, in order to expel the air. It results in a loss of energy, or an increase of fuel consumption, in the same proportion that such back pressure bears to the total mean effective pressure above the atmosphere, and becomes a greater percentage of loss in the otherwise more economical types of engine, in which the steam is used expansively. The loss due to back pressure increases as the load or total mean effective pressure decreases. When the mean effective pressure is 40 pounds to the square inch, the loss of power or fuel is 2.4 per cent. for a back-pressure of one pound, and where the mean effective pressure is thirty pounds, the loss of

power or fuel is 3.2 per cent., so that it can readily be ascertained with a back pressure of 3, 5 or 8 pounds, what a considerable loss will be caused as a result.

The ability to distribute a volume of exhaust steam, not of itself sufficient to exert a serviceable pressure in the main, and to force an effective circulation, is abundantly worthy of the consideration of all heating enginers. Under the usual methods of steam heating, it is necessary to carry a back pressure even during mild weather when the full efficiency of the radiating surface is not demanded, and when there may be but few of the radiators of an extensive heating system in actual operation. In many instances, there is not sufficient exhaust steam to fill the mains, and force a circulation in a gravity system, in which case the shortages must be supplemented by live steam, the evaporation of which necessitates additional expense for fuel. With the Webster System, under similar conditions, the limited volume of exhaust steam may be distributed and utilized in the radiating surface at a pressure less than that of the atmosphere, without calling to its aid any supplemented live steam supply. The engines under these conditions may be operated with the highest obtainable economy when used in connection with heating.

With the Webster System the steam suplied to the heating main may be either at or slightly above or below the pressure of the atmosphere, as required by the best operating conditions due to local circumstances.

Upon opening the supply valve the steam immediately flows into the lower pressure within the radiator, expanding and filling the air space driving the air before it. When the steam reaches the Webster Water Seal Valve, placed at the lowest and farthest point of each radiator, its progress is effectively checked, and as the air and water of condensation accumulate, the Webster Water Seal Valve ejects them into the return system. The steam is thus confined within the radiator until condensed, the condensation creating a partial vacuum which induces a flow of more steam into the radiator.

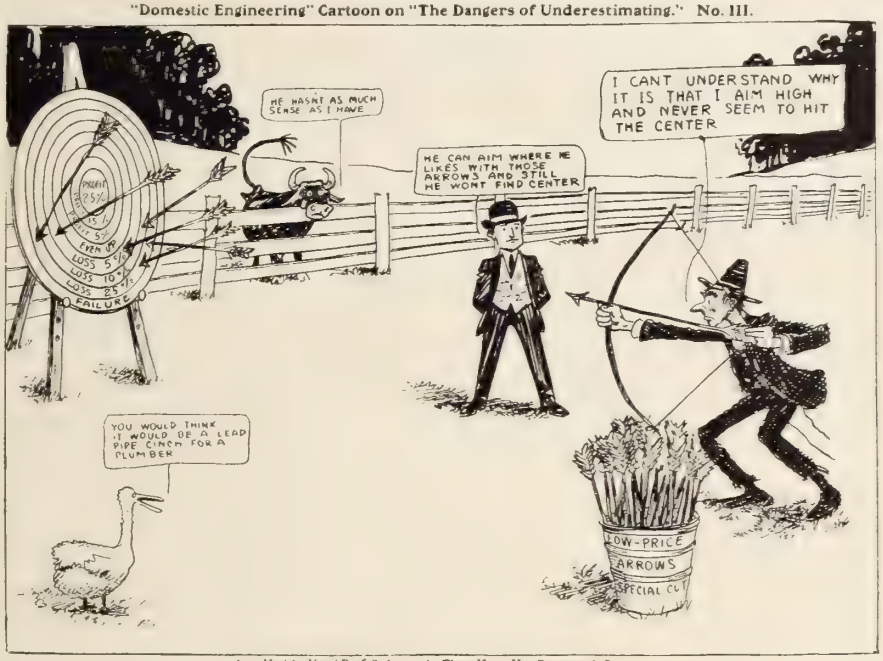
By the Webster System it is possible to distribute a minimum volume of steam to all points requiring but a moderate heat during mild weather; it is also possible to automatically reduce the amount of steam required to maintain heat at night, since a volume, less than that sufficient to completely fill the radiator at atmospheric pressure, may be distributed wherever needed, with a pressure in the mains below that of the atmosphere, thus reducing the general temperature of the radiators, the rate of condensation during the hours when the building is not occupied, and the cost of fuel during that time.

With this system, it is no longer necessary to "roast" in some portions of a building, in order to secure the proper circulation in the radiation in the more remote parts where a comfortable temperature is desired.

The disposal of exhaust steam under the Webster System, at a pressure as low, or lower, than that required to exhaust freely to the atmosphere, permits of the use of the more economical compound engines and pumps, and consequently enables the designing engineer to employ such engines without the necessity of giving a thought to the evils of "back-pressure" on his large low-pressure cylinders during the steam heating season.

One field in which we have had success is that of changing live steam heating plants so that exhaust steam, otherwise wasted, is utilized for heating. Many manufacturing plants are to-day using live steam for heating where with proper changes the exhaust from the main engine would not only be capable of heating the buildings, but could also heat an abundance of water for manufacturing purposes, as in bleacheries, dye-houses, laundries, and the like.

"Domestic Engineering" Cartoon on "The Dangers of Underestimating." No. III.


HE HASN'T AS MUCH SENSE AS I HAVE
I CANT UNDERSTAND WHY IT IS THAT I AIM HIGH AND NEVER SEEM TO HIT THE CENTER
HE CAN AIM WHERE HE LIKES WITH THOSE ARROWS AND STILL HE WONT FIND CENTER
YOU WOULD THINK IT WOULD BE A LEAD PIPE CINCH FOR A PLUMBER
PROFIT
LOSS 5%
LOSS 10%
LOSS 25%
FAILURE
LOW-PRICE ARROWS
SPECIAL CUT

Aim High! Use "Profit" Arrows! They Have No Downward Curve!

THE PLUMBING BUSINESS.

(Continued from page 9)

position that calls for all the tact and wisdom that can be acquired. Guessing on the result will surely bring all kinds of trouble.

If I bought a bill of goods that were soon to be placed and I was not hard up for cash I would surely discount the bill. If I were putting in stock to fill up and I did not know how soon it would be sold I should take a careful look over the field and see what the prospects were and how much cash I would be liable to need and also observe how the collections were panning out. Then I would figure it out just which was worth more to me, the discount or the ready cash, and I would act accordingly.

One can not afford to take in the "bargain sales," or to load up on certain goods merely because of an expected raise of the market. The state of the market does not concern you whatsoever upon a class of goods that you do not sell, or goods that are slow movers. What is the sense in tying up from $200 to perhaps $500 in a line of brass goods that a goodly percentage of which may lie on the shelf for a couple of years, just because that these goods will go up "10 per cent." the "next month ?"

If I were a jobber and one of my salesmen came and turned in a bill which showed that he had put off any such sale of goods upon an easy buyer, I would fire that man at once for I would know that when the master woke up and got next, I would lose all of his trade. Such sales are far from being a paying proposition viewed from any standpoint.

When you get a tip that goods will advance and you know that you have a place to put the goods in a reasonable time, why it would not be a good business deal to turn the chance down. In such a case, buy, if the goods are of a class that are reliable and are demanded by your trade.

The Question Box

Subscribers are Urged to Send Questions to be Answered, or to Comment on Letters Published. Descriptions of Jobs Done or Shop Kinks are Also Invited.

MAKE HOT WATER COME QUICKER.

Editor Plumber and Steamfitter.—At the sink of a certain house the hot water is a long time in coming. When first opened some lukewarm water will run out, and then it comes cold for a spell and last of all the hot water arrives. Can you tell what is the matter? and if so, how to fix it?

"RAPIDS."

Lachine, Que., Sept. 23.

We should judge that the plumbing system was not placed upon a circulation. The lukewarm water that first appeared probably had stood in the pipe somewhere along the line where it could absorb a little heat. The cold water might have laid (and probably did) in some dip or trap, and this will explain that part of it. When all this amount of water was passed out of the way, the hot water at last arrived. Probably several gallons of water was wasted and if metered it would amount to a snug little sum in the course of time. The remedy is to arrange the plumbing lines upon a circulating plan, so that the water will be drawn almost instantly when the faucet is opened. Keep your eyes upon the pages of the trade papers and you will see many plans of this nature and comments upon the work as well.—D. C. H.

JOURNEYMAN WANTS EDUCATION

Editor Plumber and Steamfitter,—According to the papers, I see that the journeyman is soon due to have a much more thorough education. In some places he must now pass certain examinations and come up to certain marks or lay down the tools as far as that place is concerned. The master likewise is up against the same proposition. Now what I want to ask is, how can we prepare ourselves, and where? Perhaps you can give us a tip in the matter, or some of the many readers of the paper will favor the writer with some good advice.

"INTERESTED."

Toronto, Sept. 26.

We would state that the examinations that we know anything about are divided into two parts, viz., the written and the practical. Now, as far as the practical part of it is concerned, we believe that most of those who would consider themselves fitted to hold a license, could pass on the spot. If not, then it is up to them to get the wisdom from serving their proper time. There are various trade schools on this continent where the technical part of the business is taught. Also several correspondence schools, from which good results may be obtained if the student will only hang on and complete the full course that he takes up. Without seeming over-proud in the matter, we might mention the fact that we are running a pretty good bureau of information in this paper, which we are putting out twice a month. The paper seeks to keep up with the times and to give the very best matter that pertains to both the craft and the business. We believe that by reading it carefully you will acquire a large amount of information that otherwise would be lost to you entirely. Some day the elements of sanitary plumbing may be taught in our technical and public schools. They have already began to do this in one of the larger cities of the United States and the experiment will be watched with interest.—D. C. H.

RUNNING JOINTS.

Editor Plumber and Steamfitter.—The other day I was sent to make up some joints in a ditch that had been left, and when I went to pour the second one, it all but exploded and scarred me pretty well. As I am a helper and have not worked at the business very long, I wish that you would give me a little information about pouring the lead on soil or water pipes.

"HELPER."

Guelph, Sept. 20.

The hub must have contained some water or moisture and the wonder is that you were not severely burned as a consequence. You should have removed the moisture before attempting to pour the joint. The plumber was at fault in that he did not put you next as to what you would be up against. He also should have attempted to so stop up the joint the night before, that no moisture would have gotten in.

If a pipe has laid for a spell, it is always the safest way to make sure that no water is in the hub before you attempt to pour the lead. Caulk in enough oakum so that you can make the joint at one pouring. When two pourings are made it does not make a first-class job. See that the pipe is not crimped to one side so that the lead cannot be poured and make a complete circle around the pipe. If the lead does not get all around the pipe, an imperfect joint will be the consequence and the work will have to be done over on the spot, or at least when the inspector comes to apply the test. That is, if he is an honest inspector and attends to his duty in the manner in which he should. After the lead has cooled it may be calked to its place. Do not hammer it too hard, or you will run a chance of splitting the hub, and then there will be the deuce to pay. A little experience will teach you just how hard to caulk in the lead.—D. C. H.

IRON OR EARTHEN SOIL PIPE?

Editor Plumber and Steamfitter,—In running the house drain from the outside of the cellar wall to the sewer would you prefer to use earthen or iron soil pipe? An early answer will greatly oblige.

"SEWER PIPE."

Woodstock, Sept. 26.

This is a case which involves several considerations. In certain cases where certain chemicals are to pass through the drain, iron pipe should not be used. Also if an electric road runs anywhere near to the drain, it would be better to use the earthen pipe, for reasons which were stated at length in this paper some time ago.

If these two objections do not obtain and the ground through which the drain is to run is very sandy and will easily shift, or is new-made ground, we believe that it would be safer to use the iron pipe. From the foregoing you will at once see that there are several matters to be considered, not to mention the plumbing ordinance, in case your town is fortunate enough to have a thing of that kind.—D. C. H.

Profits for Plumbers in Selling Lighting Fixtures

Both Gas and Electric Fixtures Can be Sold With Profit by Plumbers—Good Profits With Small Space Taken for Display—Guelph Plumbing Firm Establishes Electrical Dept.

One of the most profitable side-lines a master plumber can take up is that of electric and gas lighting fixtures, and many plumbing firms have been very successful in developing this branch of their trade. In gas fixtures he has the inside track, because he is the one who installs the piping system and consequently has first chance to supply the fixtures if he is enterprising enough to go after the business. And the same argument applies to the firms who do electric wiring in connection with their plumbing and gas-fitting trade. In fact, it will often pay to establish an electrical department for the sake of getting the sales of fixtures after the wiring has been installed.

When the builder of a new home lets the contract for the plumbing of his house, that is the time the plumber should get busy, as many in the trade do, in trying to land the contract for the lighting fixtures of the new home. The makers of the lighting lines are always glad to have the opportunity to submit special designs of lighting fixtures, these being either in the form of photographs or special pen and ink drawings. By this plan, the home builder can very often obtain an exclusive set of fixtures for his home that is not to be had from the ordinary stocks that are carried by either plumbers or the exclsuive lighting-fixture people.

George E. B. Grinyer & Co., Guelph, who last year established a plumbing business in the premises formerly occupied by Wm. Sunley, Mr. Grinyer having been in business for himself for about a year, have now added a gas and electric lighting fixture department to their business and are finding it a paying branch.

WE SHED NEW LIGHT ON
the secrets of modern illumination by fitting out private residences with a gas or electric system that will assure clear, steady and penetrating light to please both host and guest. We furnish the most artistic and ornamental fixtures for either gas or electricity ,and the cost is scarcely noticeable when the vast benefit is considered

Geo. E. B. Grinyer & Co

Plumbers. 'Phone 505
26 West Market Square Sunley's
Old Stand.

A Good Lighting Ad.

Display Windows and Staff of a Progres sive Guelph Plumbing Firm.

The firm's premises have a large window space, and, though not a modern front, the window provides an excellent opportunity for displaying gas and electric fixtures, as well as baths, lavatories and closets. And it is safe to say that few pass the shop without having lighting goods, as well as plumbing fixtures, impressed upon their mind.

The electrical department, which is in charge of Herbert E. Bates, a member of the firm, who spent eight years in the business in New York, has adopted progressive methods of pushing the sales of lighting goods, a sample of their advertising in the local papers being reproduced. It is an ad. well calculated to attract and interest readers and induce them to visit the store to look further into the lighting question. When establishing the department, the firm also had reading notices inserted in the Guelph daily papers to announce their new departure. They are also increasing their display and stock of fixtures in order to be able to show a wide assortment.

Another picture shows the front of the shop, with nine of the firm's staff in the doorway. G. E. B. Grinyer, head of the firm, is standing on the right of the picture, and Mr. Bates on the left. H. Heather, a third member of the firm, looks after the office work.

Seasonable Lines.

The fall is naturally the best time to push lighting goods, and the best way to sell them is to connect them up so that as many individual fixtures as possible can be demonstrated in actual use. This applies equally to electric and gas fixtures.

A desirable method of showing gas fixtures is to have a large pipe, supplied with gas, over the counter or near where the goods are kept, as illustrated in the accompanying picture, and to this various burners and lights can be permanently attached. This arrangement will be found invaluable in showing off the various lights and globes to customers, who can then make intelligent choice.

Demonstrating Gas Fixtures.

The assortment of the various kinds of goods can be proportioned to the demand, but a large variety of whatever goods are carried is as much of a drawing card as in any other line. The reputation of being headquarters in the town for gas light goods is also valuable.

GOSSIP OF THE TRADE

Cleator & Green, plumbers, Vancouver, have dissolved.

Beauchamp & Gagnon, plumbers, Monver, have dissolved.

Kipp & Montgomery have started a plumbing business at Vancouver.

W. T. Creighton & Co., tinsmiths and roofers, Hamilton, have dissolved.

Richard W. Gordon, plumber and tinsmith, Harrow, Ont., has assigned.

J. M. Dessert & Fils, tinsmiths, Roxton Falls, Que., have been registered.

The Robertson Foundry Co., Robertsonville, Que., has obtained a charter.

Sanders & Burnett, tinsmiths, Ethelbert, Man., have gone out of business.

F. A. Cameron, tinsmith, Lumsden, Sask., is succeeded in business by O. G. Wallace.

A meeting of the creditors of R. H. Connick, tinsmith, St. Stephen, N. B., was held on Sept. 22.

The Canada Metal Co. will build a 1-storey brick addition to their Toronto foundry at a cost of $5,000.

The Windsor Hardware Co. has secured the contract for a new steam heating plant for the Iroquois Hotel there.

J. Mitchell, representing James Cartland & Sons, brass founders, Birmingham, England, was a visitor to Toronto recently.

Edwin Newsome, sanitary engineer, Ottawa, has invented a new bath waste and overflow and will put it on the market shortly.

The contract for the heating and plumbing of the market building at Moose Jaw was given to Frost Bros., at a cost of $2,[illegible].

H. W. Mundy, plumber, Montreal, is enlarging. His business has been registered as a company under the name H. W. Mundy & Co.

A permit has been granted at Toronto to the Standard Sanitary Manufacturing Company to erect a factory and clearing-house to cost $12,500.

The National Iron Works, Toronto, are doubling the size of their pipe plant. They expect to complete the alterations by the middle of October.

Flowers & St. Ledger, sheet metal workers and roofers, Toronto, have dissolved partnership. John T. Flowers will continue the business.

The contracts for improvements to Meaford's public school were awarded to Cleland Bros., heating and ventilating, and D. B. Brown, plumbing.

The contract for plumbing and heating in the new Fleetwood school, at Lethbridge, was awarded to the Standard Plumbing Co., at $12,637.

J. Gray was awarded the heating and plumbing contracts at the new Bedford Park (Toronto) school, at $1,143.78 for the former and $343 for the latter.

The Sheldon Company, of Galt, have secured the contract for the ventilation of Guelph's Central School. An electric motor to drive the fans will be used instead of steam exhaust engine.

Appliances for steam heating of the Yorkville Avenue fire hall, Toronto, will be supplied by Gentle & Travis, at $1,-170; and appliances for the heating of the Agnes Street police station, will be furnished by J. E. Gray, at $892.

The contracts for plumbing, heating and ventilation of the two new technical high schools at Winnipeg were awarded as follows: St. John's school, Standard Plumbing & Heating Co., at $35,650; South End school, Cotter Bros., $35,497.

Donald Cummings represented Local 56, Halifax, at the St. Paul convention of the United Association of Journeymen Plumbers, Gas Fitters, Steam Fitters and Steam Fitters' Helpers, of the United States and Canada, last month.

George Davidson, for years a member of the firm of McKiggan & Davidson, Woodstock, Ont., and A. L. McInnis, who has been in business on Reeve st. there, have been combined in a heating, plumbing, tinsmithing and general hardware business.

J. F. Bruce, Toronto delegate to the journeymen plumbers' convention at St. Paul, sprang a dramatic incident at the opening of the meeting of that body by waving a Union Jack, and saying the Canadian delegates had been slighted in that their ensign had been left out of the decorations. The president had the flag given a prominent place.

ONE OF KINGSTON'S SHOPS.

In the accompanying illustration is shown the shop of D. Hall, Kingston, Mr. David Hall standing in the doorway, with his son Charles on his right-hand, and six of his staff lined up in front of the windows. Mr. Hall is one of the oldest plumbers in Kingston, and learned his trade in the shop which he now owns. He has a high-class trade and is well known in eastern Ontario. His daughter, who is also an important factor in the business, by looking after the books and doing the buying, declined to leave her desk, but you can take any traveler's word for it that she knows her part all right.

Messrs D. and Charles Hall, and Their Staff, in Front of Their Shop at Kingston, Ont.

PLUMBERS WIN AND LOSE

The final baseball games of the season between the Toronto master plumbers and the representatives of the supply houses were played at Diamond Park, Fraser Avenue, on Saturday afternoon, Sept. 17. Fully a couple of hundred plumbers and their friends turning out to see the games.

The first game was between the master plumbers and the supply travelers. As usual the master plumbers came off victorious, the score being 10 runs to 6. The winning team was made up as follows :—Ed. Needham, Charlie Hicks, Dave Menzies, W. Schultz, Dan Glynn, R. Stevenson, A. Mackmin, A. Passmore, Rob. Shannon and F. J. Smith. The travelers' team was composed of Peter McMichael, Mgr. Dominion Radiator Co. ; Chas. Bakemeyer, Canadian Wolverine Co. ; G. D. Clewes, Montreal Rolling Mills ; G. Kingswood, Standard Sanitary Mfg. Co. ; Joe Bell, King Radiator Co. ; A. Jury, Gurney Fdry. Co.; A. E. Quinn, Taylor, Forbes ; Hugh McAlpine, James Robertson Co. ; W. H. Darling, Canadian Wolverine Co.

Wm. Copping umpired the balls and strikes and A. D. McArthur looked after the bases. Harry Pepper kept score for the plumbers, and Jack Owston did the same duty for the travelers.

The big feature of the afternoon was the game of indoor baseball between the veteran master plumbers and the managers of supply houses, who defeated the plumbers 19 runs to 11. The interest in the game is easy to be seen when such names as the following appear in the lineup. Master plumbers :—Fred Armstrong, Jim McKettrick, Ed. Larter, John Wright, H. Blumberg, Gordon Ritchie, Geo. Clapperton, P. Ross, Geo. Cooper, and Harry Hicks. Supply managers :—Fred. Sommerville, Sommerville, Ltd., Robt. J. Cluff, King Radiator ; A. D. McArthur, Standard Ideal Mfg. Co. ; Dave Procter, Standard Sanitary Mfg. Co. ; W. H. Cunningham, Ideal Mfg. Co. ; Wm. Taylor, Taylor, Forbes ; John Owston, James Robertson Mfg. Co. ; Dinny World, James Morrison Brass Mfg. Co. ; George Gowanlock, Toronto H'dware Mfg. Co. ; Frank Webb, James Robertson Mfg. Co.

Dinny McMullen umpired the game with his usual fairness to the winners. In one inning nine men having to be put out to satisfy him. S. J. Wheatley of the Monarch Brass Mfg. Co., scored for the managers, and Garrett F. Frankland kept tab for the plumbers.

Some heavy hitting in the first game resulted in putting the ball through one of the windows of Anthes foundry and "Pop" Anthes is keeping the ball to pay for the pane of glass.

In the indoor base ball game one wonders at the score of the master plumbers when such players as Frank Webb, of Jas. Robertson Co., one of the professionals from the armouries, was fanned out.

Jack Owston used a slab instead of the regulation bat as that was the only way in which he could hit the ball.

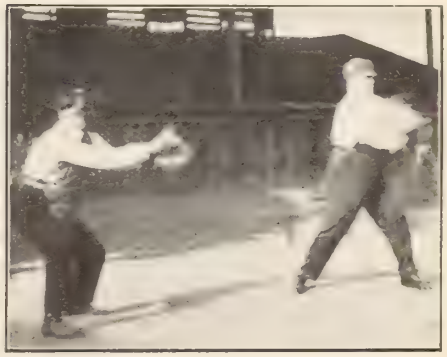
For the benefit of those plumbers who were not in the veteran class a number of games of quoits were kept going all afternoon. Tom Maxwell and Robt. Sherlock beat all comers, so helped retrieve some of the honors for the plumbers.

Tom Worthington, of the Dominion Radiator Co., did the honors for the hosts by looking after the refreshment stand. He welcomed the guests and dispensed refreshments to the king's taste.

Some well-known faces seen on the grounds other than those already mentioned were : Alex. Purdy, Geo. McGuire, Frank Atkins, A. E. Cottrell, P. Read, J. S. Fullerton, Jack North, H. Ruddick, James Sherlock, and Sam. Ryding, of the Monarch Brass Mfg. Co., "Pop" Anthes, of Anthes Mfg. Co., C. C. MacDonald, of MacDonald & Sons, A. C. Rankin, and T. B. Alcock, secretary of the Gurney Foundry Co.

Group of Supply Men at the Plumbers' Ball Game.

Toronto Master Plumbers Having a Day Off.



PETER McMICHAEL AT BAT.

Manager of the Dominion Radiator Co. Knocking out a Home Run.

BUILDING AND INDUSTRIAL NEWS

For additional items see the correspondence pages. Information is solicited regarding building and industrial news, the incorporation of companies, establishment or enlargement of mills, factories or foundries, municipal waterworks and sewerage systems, railway or mining news, etc.

Municipal Undertakings.

The waterworks extension by-law was carried at New Liskeard.

Sewers costing about $70,000 will be installed at Nanaimo, B. C.

Rouleau, Sask., will borrow $45,000 for installation of a waterworks system.

$15,000 will be expended on waterworks and fire protection at Biggar, Sask.

The by-law to expend $52,000 on improving the present system of waterworks was carried by Welland ratepayers.

Waterworks Engineer Fellowes has announced that new Toronto intake and conduit will be built next year. Estimated cost, about $300,000.

Ouellet & Jacques, Des Chaillons, Que., were awarded the contract for a distribution system of waterworks, at $35,381, at Edmundston, N. B.

Winnipeg's City Engineer has been instructed to prepare plans and estimate the cost for a municipal gas plant, to be submitted at the next meeting of Council.

A gravity waterworks system is to be installed at Dauphin, Man., at a cost of $175,000. Tenders for the construction of this system and for the supply of material were let for the piping to the

As a result of the complaints received from citizens in reference to the flooding of cellars by reason of sewers backing up, the Toronto Board of Control instructed City Engineer Rust to report on the construction of a system of storm sewers to relieve the present drainage system.

The contract for section No. Six of the Toronto trunk sewer was awarded by the Board of Control to the Orpen Co. Their tender price was $23.07 a foot, while that of the city engineer was $23.48. Matthew Warnock was awarded the contract for stop valves for the Toronto waterworks, to cost $5,717.52. Canadian Pipe Co., Vancouver. The Canada Iron Corporation, of Fort William, secured the contract for the supply of iron pipe for the town distribution system, and the American Sewer Pipe Co., Akron, Ohio, were awarded the contract for the supply of sewer pipe. Hydrants and valves will be furnished by the London Foundry Co., London. The general installation of this system in the town will be carried out by Flanagan and Murphy, in addition to the outfall sewer running into a septic tank near the Vermilion river.

Public Buildings.

A new school will be built at London, to cost $40,000.

A $70,000 R. C. church will be erected at Lethbridge next spring.

The new children's hospital at Winnipeg will cost $65,000.

The new hospital at Ladysmith, B. C., will cost $16,000 inclusive of plumbing.

A $20,000 hospital will be built by the Sisters of Charity at Vegreville, Sask.

John Strand will construct the new hospital at Quesnel, B. C. Estimated outlay, $3,000.

Permits for two new police stations were taken out at Winnipeg. They will each cost $27,000.

Wilson & Son are preparing plans for a ventilation system for the House of Refuge, Chatham, Ont.

St. Franics Xavier College, Antigonish, N. S., are erecting a science building to cost over $50,000.

The plans for the new armory at Portage la Prairie have been sent for approval of the town authorities.

The National Transcontinental Ry. have bought the old Champlain market at Quebec as a site for their terminal.

Lindsay is erecting two new public schools at a cost of $55,000, which will be ready for occupation on January 1 next.

Tenders will be received for supplying and installing heating appliances for North Hastings, B. C., school. C. Corder, secretary.

E. & W. S. Maxwell, Montreal, are preparing plans and specifications for the erection of a Roman Catholic Cathedral at Saskatoon.

The Public Works Department will call for tenders at the end of the year for erection of new departmental block at Ottawa. Plans are being revised.

Tenders have been invited by the B. C. provincial public works department for the erection of new school houses at Langley, Okanagan Landing and Yale Road.

A $40,000 sanitarium with mineral water in abundance and facilities for fifty different kinds of curative baths will be built in Elmwood, Man., next year.

It is understood that the Manitoba government will proceed to erect on its new property, parliament buildings in keeping with the importance of the province.

The Meaford Public School Board are asking the town council to provide $3,400 for improving the heating and lighting facilities and furnishing additional sanitary appliances for the public school building.

At a meeting of the buildings committee of the St. John school board it was decided to call for tenders for a new school building. A large amount of repair work was ordered on the various school buildings.

Permits for two buildings for the new Toronto General Hospital have been issued. One is the emergency building, basement and one storey, to cost $30,000. The other is the out-patients' building, basement and two storeys' to cost $100,000.

Additions and extensions costing $110,000 will be built to the Saskatoon hospital. A new $30,000 wing will be erected, a $10,000 laundry, and a $20,000 contagious diseases hospital. The heating system and the remodelling of the present system will cost $28,000.

The Manitoba government is said to have bought five hundred acres in St. Vital, fronting on Red river, two miles from Winnipeg, for $175,000. The provincial agricultural college will be transferred there from its present location on the banks of the Assinaboine, which the institution has much outgrown.

The Winnipeg civic library and baths committee have decided to recommend the erection of at least one public plunge and shower bath. $50,000 is available. The intention is to develop a system of public bath houses throughout the city. Before work is commenced Controller Waugh's report on bath houses in Chicago will be awaited.

General Building.

The Bank of Hamilton are preparing the site for their new building, at North Vancouver.

A building permit was issued at Victoria, to Geo. Carter for stores and hall, to cost, $4,650.

Dr. A. D. Buchanan will erect a modern apartment house at New Westminster, to cost $50,000.

B. J. Perry has purchased property at Montreal, on which he will erect an up-to-date apartment building.

Preliminary plans were presented for a twelve-storey block to be erected at Vancouver, by Donnellan & Donnellan, to cost $500,000.

The contract for the erection of a residence for R. MacFarlane, Montreal, has been awarded to Chas. Thackeray & Co.

The contract for the construction of a $14,000 residence at Victoria for Mr. Justice Galliher has been awarded Nelson-Benneck & Sons.

British Columbia Telephone Company have awarded the contract for a central exchange building in North Vancouver to McDonald & Wilson.

The Imperial Life Insurance Co., will erect an office building on the west side of Victoria street, between King and Adelaide streets, Toronto.

Honeyman & Curtis, Vancouver, B.C., are the architects for the business block being erected for Irwin & Billings Co., at that place. Estimated cost, $9,500.

W. E. Binning, Listowel, has been commissioned by the Imperial Bank to visit New Liskeard and Cobalt with a view to the erection of bank buildings there.

The contract for the construction of a five storey warehouse for Joseph Brown, Vancouver, has been let in two sections to A. Gray and W. J. Davidson.

Permits were issued recently for warehouses at Vancouver, to Gray Bros. for a three-storey block, $56,000; W. R. Arnold, for four storey structure, $48,000.

Cutting Patterns in the Tin Shop

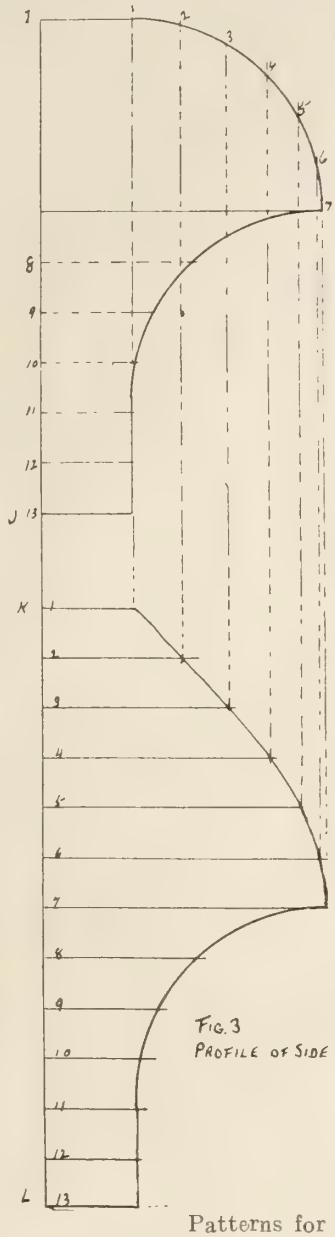
Readers of Plumber and Steamfitter are Requested to Make Use of This Department—Questions Regarding Patterns Will be Answered by Experts—Discussion is Also Invited on Any Matter Pertaining to the Tin Shop.

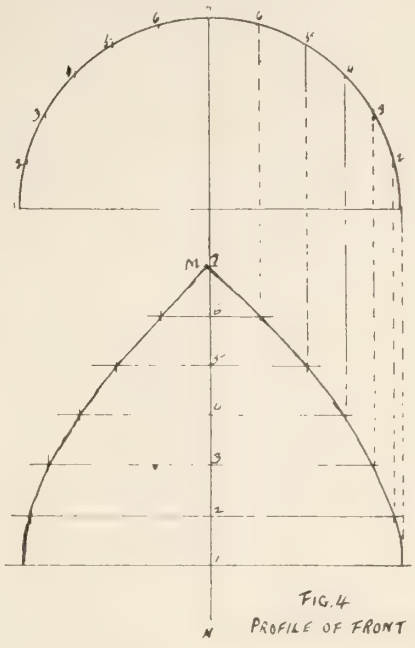
GAS STOVE CANOPY.

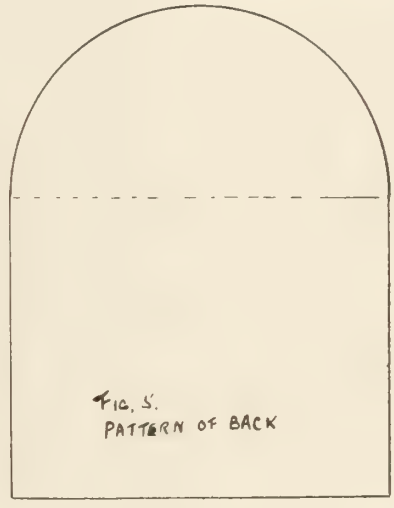
Fig. 1 is the side view of a gas stove canopy and Fig. 2 the perspective view. Draw profile as shown in Fig. 3, divide the top circle into equal parts as shown by small numbers and as the side will be straight divide the straight line of the back to get the lower half as shown by numbers. Continue the back line I J, Fig. 3, as shown at KL, on which lay out the stretchout. Take the distances from the profile as shown by corresponding numbers and draw measuring lines, and with the T-square parallel to the line I J of Fig. 3 and bringing it successively against the points in profile, draw lines to corresponding numbers. A line traced through the points thus obtained will give pattern of side.

To obtain the front draw profile of front and divide into equal parts as shown by small numbers in Fig. 4. Continue the centre line as shown at M N upon which lay out the stretchout in the usual way and draw measuring lines across. Then with the T square parallel to centre line M N Fig. 4 and bringing it successively against the points in profile draw lines to corresponding numbers and a line traced through the points thus obtained will give pattern of front as shown.

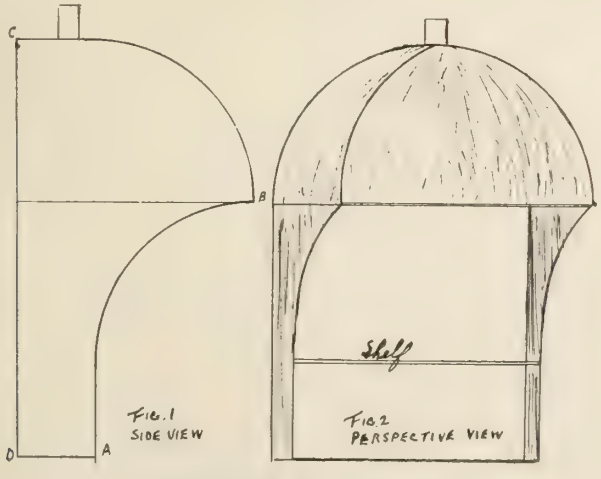
The back being straight, all that is required is to set dividers to half the height of front and describe a half circle to which add the length of the straight part of back as shown at Fig. 5. All edges to be allowed. W. J. R.







Patterns for Canopy for Gas Stove.



Views of Gas Stove Canopy.

INTERCEPTING TRAP COMPULSORY.

At the time when the City of Washington is practically abolishing the use of the intercepting trap, Morriston, N. J., in an amended code, promulgated by the Board of Health, is demanding its use. The master plumbers of the city, at the hearings on the provisions of the amended code, opposed the following clause from it:

"Every house drain must have a house trap placed inside of the house or in a vault on the outside, made accessible for cleaning purposes in either case of extra heavy cast iron pipe with two hubs with extra heavy screw cleaning plug in each hub and a Y-fitting with extra heavy sewer cleaning plug on sewer side of trap and extra heavy T on house side of trap for fresh air pipe."

PLUMBING SHOP NOT A NUISANCE

Judge Mandell, Detroit, has dissolved the temporary injunction which residents of the street between Park place and Woodward avenue secured, restraining a plumbing firm from putting up their place of business and "maintaining a nuisance." The court held that the erection of the building could not be restrained, but that if the shop proved to be a nuisance the neighbors could then take action.

PLUMBING AND HEATING MARKETS

MONTREAL.

September 29.—There is a very excellent [illegible] all the way round, business, in the words of one jobber, "never being better." Most houses state that it is far from easy obtaining delivery from some of the manufacturers, while the latter state that they are doing their best by working overtime to cope with the demand. One great feature of the demand is its widely-distributed character. The consumption seems to be good all over the country, and this is one of the best signs for a continuance of the call that can be had. It shows that no unusual condition is creating the pressure.

Goods are being put in by the plumbers as soon as they are delivered. Little stock is being accumulated, and conditions all the way round are as good as they can possibly be.

Prices are unchanged. Solder is a little weaker, owing to the lessened price of tin, but no radical change has yet been made. Prices in other lines are firm, and radiator and boiler-makers were never so in accord, as they seem to be at present.

Soil Pipe—The pressure is very heavy in soil pipe, and as soon as the plants turn out the pipe delivery is taken right through to the building. Heavy consignments are being sent to all parts. We continue to quote: Light, 60 off; medium and heavy, 70 and 10.

Lead Pipe—Lead is firm, with a very strong demand. Orders are well distributed. We quote pipe waste at 30 off; traps and bends, 50; calking lead, 5c per lb.

Solder—With tin weaker in the primary markets, solder is not so firm in tone, and good round lots obtain concessions. For small lots, however, the price is unchanged, and we quote: Half-and-half, 22c; wiping, 20½c.

Iron Pipe—The demand is active for ordinary sizes, supply houses shipping freely to all parts of the country. The local trade is very prominent. We continue to quote: ¼-in. black, 63; galvanized, 48; ⅜-in. black, 59; galvanized, 44; ½-in. black, 69; galvanized, 59; ⅜ to 4-in. black, 71½; galvanized, 61½.

Radiators and Boilers—There is no let-up in the demand for radiators and boilers. As fast as the makers turn them out they are shipped and put into houses. The tone all the way round was never better, the prices generally being well kept. We continue to quote: Steam boilers, 60 and 5; round hot water boilers, 50 and 10; wall and hot water radiators, 50 and 7½; steam radiators, 50 and 7½ and 2½ per cent.

Scrap Metal—The market offers no change in feature, with buying on the quiet side. We quote: Heavy copper wire, 11½c; light copper bottoms, 10c; heavy red brass, 10c; heavy yellow brass, 8c; light brass, 6¼c; tea lead, 2½c; heavy lead, 2¾c; scrap zinc, 3c; cast iron, $16.

Metal—Tin has weakened owing to the fall in the primary markets. Other lines are unchanged. We quote: Tin, 36 to 37½c; copper, 13½c; imported lead, $3.75; domestic lead, $3.60.

TORONTO.

Sept. 30.—Continued good business is passing, with prospects splendid right up to the end of the year. Enamelware is going out steadily and from now on should increase in demand. At present roughing-in material is to the forefront and all the master plumbers report books filled up with orders for work.

With the exception of solder, which has advanced a cent a pound on all grades, prices are the same as those ruling during the month. Cast iron fittings are slightly easier. That is a couple of houses are offering a better discount, though general quotations remain at the old figures.

The present year has been a good one for the trade and when the season is rounded out the record is expected to show up fully as well as any recent year.

Heating engineers and sheet metal men report exceedingly good business, the latter finding it hard to obtain sufficient help. Heating goods generally are in splendid demand and a number of orders are a little behind hand in shipment and delivery.

Enamelware.—Country and city business continues brisk. Out-of-town orders are showing a slight falling off, but the loss is more than offset by the increasing demand in the city. Before the end of October local trading in this line should be around record figures. Prices are unchanged and the market is firm. Deliveries to outside points for stocking up are pretty heavy. Closet combinations figure principally in the orders coming in.

Soil Pipe.—Sales have been especially good all through September and at present continue to be very fair. Trading is expected to taper off now until the turn of the year when booking for spring will be in vogue again. In Toronto there is a lot of roughing in still going on. The market is firm and prices are unchanged. Light pipe is quoted at 60 and 10; medium and heavy at 70 and 10, and 7 and 8-inch sizes, 50 per cent. Fittings are unchanged at 70 and 10 off.

Lead Pipe.—Demand is still steady and satisfactory, and much better than earlier in the season. Prices remain at 30 per cent. off. Traps and bends are quoted at 50 per cent.; calking lead is unchanged at 4½c per lb., and lead waste is at 9c a lb.

Iron Pipe and Fittings.—Conditions are about the same as at last issue. The output of pipe while large is being taken up readily. Steam-pipe sizes have best call. Quotations remain unchanged, though cast iron fittings discount has been put at 67½ instead of 65 by a couple of houses. Otherwise the market and the situation are unchanged. Discounts on malleable fittings range from 37½ to 40 per cent., with cast iron fittings from 60 to 67½ off. Bushings, cast iron are 70, and malleable are 65 per cent., nipples are 75 and 10; headers, 60, and flanged and malleable-lipped unions, 65 per cent. Galvanized pipe is $6.35, and black pipe, $4.70 per hundred feet, 1-inch size.

Solder—Quotations are still advancing with the firmness of tin and the strengthening of lead. Higher prices by a cent a pound are being asked to-day over the quotations of a fortnight ago. Various brands of wiping run from 19c to 20c, with half-and-half ranging from 19¾c to 21c. Stocks are large with demand good and steady.

Brass Goods.—The brass trade is active and business is showing steadiness. Prices hold firm at last issue's quotations.

Boilers and Radiators.—Business is at "rush" just now. So many orders are crying for shipment that deliveries are delayed. Manufacturers' stocks are greatly depleted, and the works are finding difficulty in turning out goods. The market is decidedly firm, though prices are unchanged. Discounts continue at 50 and 10 for hot water boilers and radiators, with 2½ more quoted off steam radiators. Instalations are very active at present.

Metals.—Tin, 37c; copper 13½c; lead, $3.80 (imported) $3.75 (domestic.)

Scrap.—Iron, ½c; copper, 10c to 11c; lead, 2½c.

EXAMINATIONS IN CHICAGO.

Nearly 170 journeymen and master plumbers were subjected to an examination recently, owing to the enforcement of the renewal license fee regulations.

It is a good sign, says Domestic Engineering, that the plumbing trade is on the upward trend, as examinations in the past have been largely on the 'let'em all in' order. The time is coming when plumbers' examinations, both journeymen's and masters', will represent a sanitary standing equal in importance to that attained by successful candidates in the examinations of any other trade or profession.

Books for Plumbers and Steamfitters

Books on Plumbing

Art of Lead Burning, by C. H. Fay	$2 00
Estimate Books for Plumbers—	
Office Edition, arranged for 100 Estimates	1 50
Office Edition, arranged for 250 Estimates	2 50
Pocket Edition, arranged for 50 Estimates	50
Guide to Testing Plumbing	25
House Drainage and Sanitary Plumbing	50
Johnson's Handy Manual for Plumbers and Steamfitters	1 00
Kitchen Boiler Connections	1 00
Mechanical Drawing for Plumbers, by R. M. Starbuck	1 50
Modern Plumbing Illustrated, by R. M. Starbuck	4 00
Modern Sanitary Plumbing, Steam and Hot Water Heating, by J. J. Lawler	4 00
Plumbing Catechism, by C. B. Ball	1 00
Plumbing, by Gray and Ball	1 50
Plumbing and Lead Working	25
Plumbing and House Drainage Problems	2 00
Practical Gas Fitting	1 00
Practical Gas Fitting, by Paul N. Hasluck	75
Practical Hints on Joint Wiping	25
Practical Plumbers' Work, by Paul N. Hasluck	75
Practical Up-to-Date Plumbing, by G. B. Clow	1 50
Practical Wrinkles for the Plumber, by R. M. Starbuck	1 00
Principles and Practice of Plumbing, by J. J. Cosgrove	3 00
Questions and Answers on Plumbing—	
Questions and Answers on the Theory and Practice of Sanitary Plumbing, by R. M. Starbuck	1 00
Plumbing Catechism, or the Theory and Practice of Plumbing Design	1 00
Plumbers' Manual and Text Book	1 00
Repair Kinks for Plumbers, by M. L. Kaiser	50
Sanitary Construction in Building, by Paul N. Hasluck	75
Sanitary Engineering of Buildings, by W. P. Gerhard	5 00
Sanitation in the Modern Home, by J. K. Allen	2 00
Sewers and Drains, by A. Marston	1 00
Standard Practical Plumbing, by P. J. Davies	3 00
Treatment of Septic Sewage	50

Books on Heating

Baldwin on Heating, or Hints to Steamfitters	$2 50
Contract and Estimate Record Book for Steam and Hot Water Heating, by B. H. Jessup	1 50
Dean's System of Greenhouse Heating	2 00
Formulas and Tables for Heating, by J. H. Kinealy	1 00
Furnace Heating, by W. G. Snow	1 75
Heating and Ventilation, by Chas. L. Hubbard	1 50
Heating and Ventilating Buildings, by R. C. Carpenter	4 00
Hot Water Heating, Steam and Gas Fitting, Acetylene Gas; How Generated and How Used, by Lawler and Hanchett	2 00
Hot Water Heating, Steam and Gas Fitting, by Wm. Donaldson	1 50
House Heating by Steam and Water, by C. B. Thompson	3 00
Notes on Heating and Ventilation, by J. K. Allen	2 00
Practical Steam and Hot Water Heating, by A. G. King	3 00
Principles of Heating, by Wm. G. Snow	2 00
Questions and Answers on the Theory and Practice of Steam and Hot Water Heating, by R. M. Starbuck	1 00
The Schoolhouse, Its Heating and Ventilation, by J. A. Moore	2 00
Sizes of Flow and Return Steam Mains	50
Steam and Hot Water Fitters' Text Book, by Thos. E. McNeill	1 00
Steam and Hot Water Heating Charts, by A. G. King	5 00
Steam Heating, by Frederic Dye	4 00
Swimming Pools, by J. K. Allen	50
Ventilation of Buildings, by Snow and Nolan	50
Warming Buildings by Hot Water, by Frederic Dye	3 50

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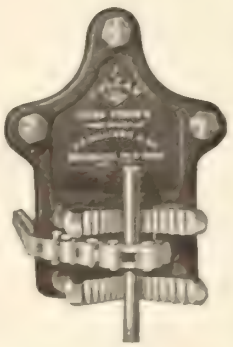

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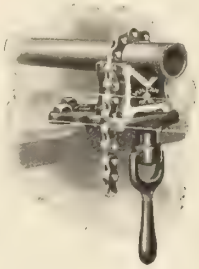

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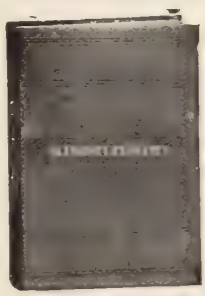

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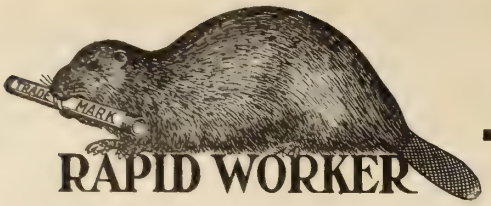

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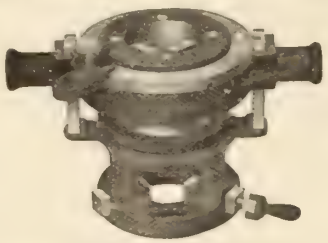

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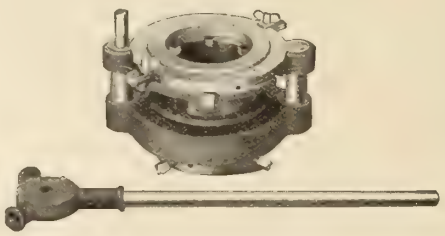

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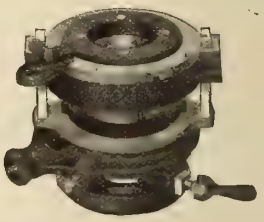

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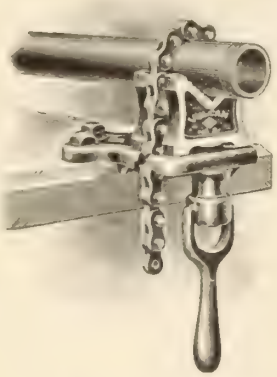

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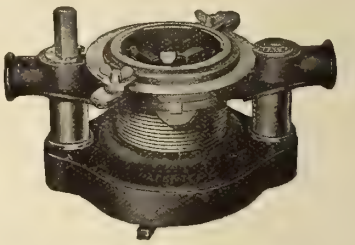

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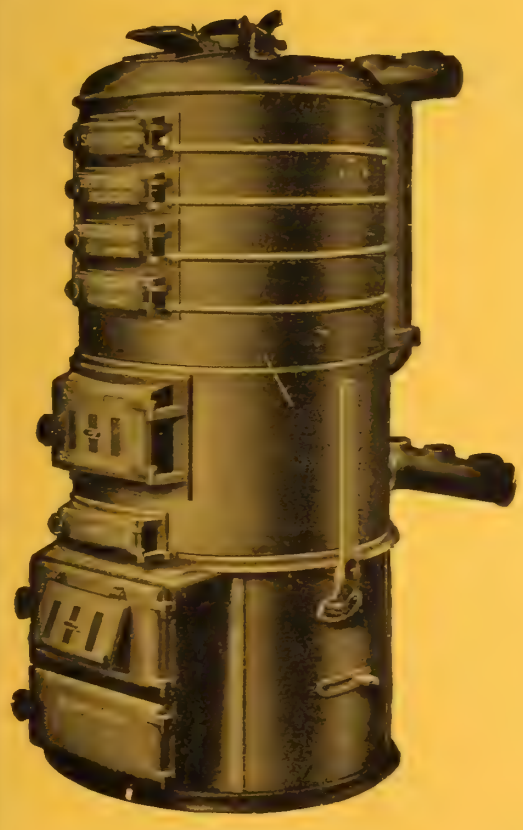

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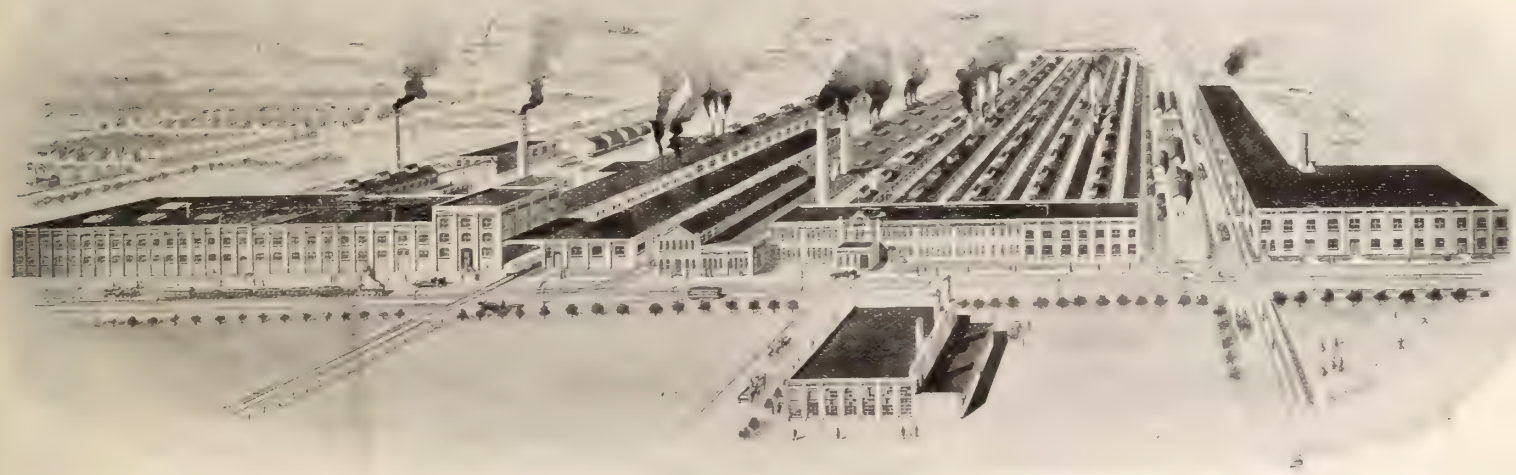

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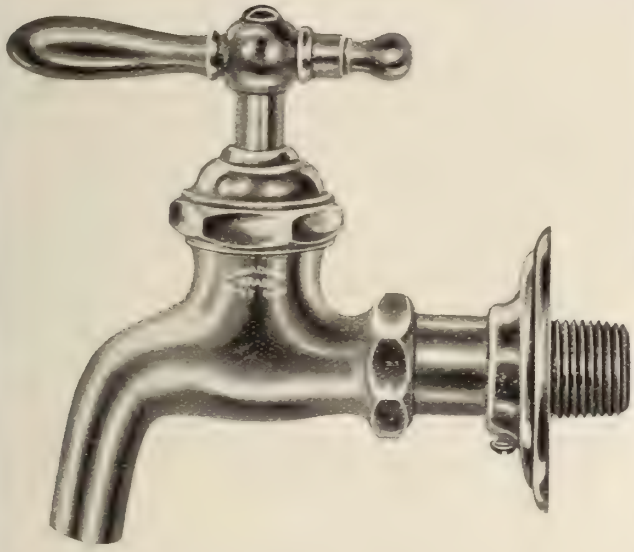

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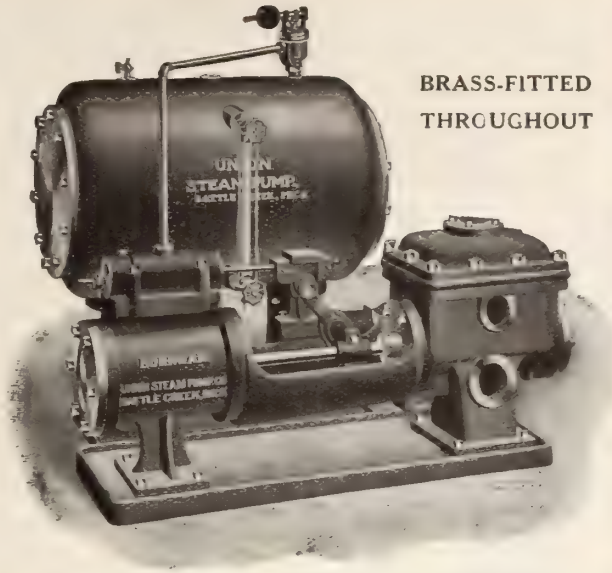

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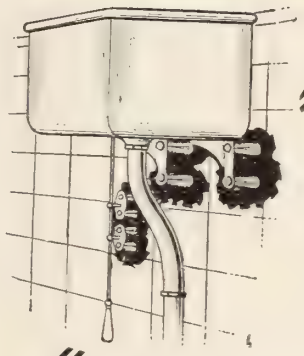

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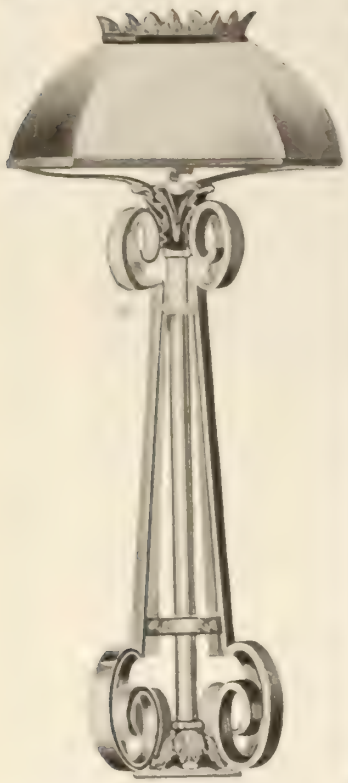

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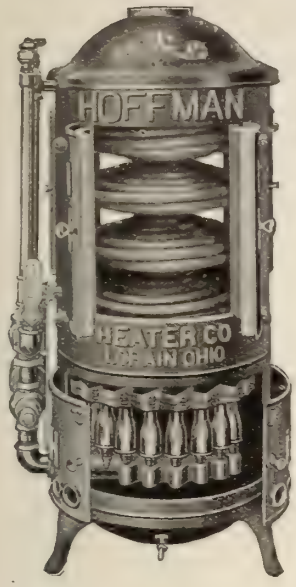

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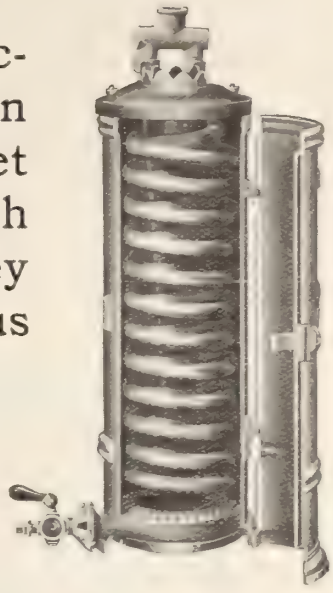

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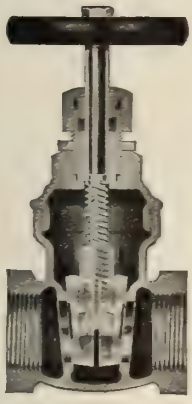

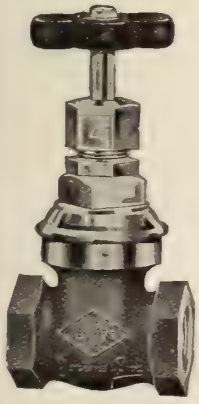

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TORONTO, OCTOBER 15, 1910

THE THANKSGIVING DAY CONVENTION.

At the National Master Plumbers' Association convention held in Toronto six weeks ago, the Ontario delegates got together and decided to organize a provincial association, the matter being left in the hands of Vice-President Shannon, who was to secure information from the officers of the Retail Merchants' Association regarding the advantages to be gained from organizing under their charter, and send a circular regarding same to the master plumbers throughout Ontario.

In two weeks more Thanksgiving Day will be here, yet the circulars have not been sent out, and no place of meeting has been announced. Mr. Shannon and his staff of workmen have been working day and night on a big heating job, but he hopes to receive the circulars from the Retail Merchants' Association soon, and forward them to the trade with information regarding the time and place of meeting. The meetings will probably be held in the Retail Merchants' Association rooms at 21 Richmond street west, Toronto.

It is unfortunate that the advantages of organizing a Provincial Master Plumbers' Section of the Retail Merchants' Association have not been presented in ample time to give the subject the consideration it deserves. Hasty action should be avoided, and a matter of this importance should be carefully considered before a convention is held, so that the delegates can act intelligently.

The charter secured by the Retail Merchants' Association from the Dominion Parliament at its last session is said to contain clauses which will enable master plumbers, or any other class of business men, to enter into agreements with wholesalers or manufacturers and enforce the carrying out of these agreements. E. F. B. Johnston, K.C., in an address delivered before the Grocers' Guild, published in full in The Plumber and Steamfitter of May 16, 1910, contended that any trade association could do this. Possibly master plumbers may be able to do more under the R. M. A. charter than as members of a single line association such as the N. A. M. P. But that is a question, which, as said before, must be given careful, rather than hasty, consideration.

The Toronto master plumbers are organized as a section of the R. M. A., have over 100 members enrolled, several previous attempts to bring the trade together having only resulted in enrolling about 40. The R. M. A. must be given credit for bringing the present association together, and it is now proposed that the Provincial M. P. A. should organize as a section of the Retail Merchants' Association. This necessitates a study of the whole master plumbers' organization.

The N. A. M. P. has for fifteen years directed the organized efforts of the master plumbers in Canada It is composed of delegates from local and provincial associations and individual members in good standing. The annual membership fee, or per capita tax, is $3 per year. Some local associations have enrolled their entire membership, while others have merely sent delegates to the convention, and paid the per capita tax on those delegates. The young association in Toronto, for instance, paid $15 for the five delegates it sent to the last convention.

Members of the local association in Toronto pay $5 per year for membership in the R. M. A., and most of them also pay $5 extra for a monthly report on people who don't pay their acounts. For the $5 membership fee the plumbers' section receive a meeting hall, and the assistance of a stenographer in sending out notices. If any other expenses are to be met, such as the $15 per capita tax paid to the National Association, the money must be raised by special assessment.

If a Provincial Master Plumbers' section of the R. M. A. is formed, master plumbers in places where there are local Retail Merchants' Associations, would pay their $5 fee to the local secretary of that association. Part of the fee would remain with the local merchants' association, and part would go to the Provincial and Dominion R. M. Associations as per capita tax. Whether any would go to the Provincial Plumbers' section is not clear, but certainly none would go to the National M. P. A. Unless the latter merged itself into the Dominian R. M. A., there would be a complicated state of affairs.

The Plumber and Steamfitter states the situation in order that delegates to the Thanksgiving Day convention may be able to discuss the question more intelligently, and in order that time can be devoted to the discussion of other questions at the coming convention.

A PROVINCIAL PLUMBING LAW.

Probably the most important matter deserving consideration at the Thanksgiving Day convention of Ontario Master Plumbers, aside from the question of organization is the laying out of some definite work for the organization to carry out. And no subject is more important to plumbers and the public alike than the enactment of a Provincial Plumbing Law. The convention will justify its existence if it takes steps towards bringing such a law into existence and elects officers who will devote some time and energy to, conferring with the Provincial Board of Health and carrying out the instructions of the convention.

In this issue of The Plumber and Steamfitter, the plumbing regulations governing the State of Maryland are published and in future issues similar laws adopted in the States of Massachusetts and Ohio will be reprinted.

The Maryland law has received the endorsation of the National Master Plumbers' Association of the United States and should be studied by all who have the interest of the plumbing trade at heart. The bill does not allow any one other than a qualified master plumber to get a permit to do plumbing work in that state, and no one but a registered plumber holding a certificate can execute the work; it provides for a master's and journeyman's certificate and apprentice's permit. A journeyman or apprentice can work only under the immediate supervision and control of a master plumber. The Maryland plumbers look to the operations of this Bill to vastly improve the status of the plumbing business in that state and the public will get its share of the benefits, in a better class of construction; hence a more satisfactory return for the money expended.

THE COLLECTION PROBLEM.

Don't forget the collections these days. Money is freer than it was. The good crops have put the farmers in a sound financial position, while they have also given the country, generally, a confidence in the commercial situation which must have a satisfactory effect upon finance. There is no reason why accounts should not be met promptly, for certain it is that no one can with any justification raise the plea of hard times and of money shortness.

Therefore, every plumber should get out after his back accounts forthwith. The money is due to him, and he is stupid if he does not push hard to get it. Why should a plumber be lax on his accounts? His is not a philanthropic institution. He has to pay his rent and taxes and live just the same as those who are owing this money. His profits are not so abnormal that he can afford to carry a customer. In fact the average price now charged should be absolutely on a cash basis. But, unfortunately, the plumber's bill is regarded by many customers as one that can be put off indefinitely. It is up to the plumber to alter that idea.

Of course, if a plumber lets his bills remain unpaid, with no attempt at reminder, he is, in a way, responsible for a customer thinking that the man does not want the money. Maybe that after the invoice he has received no further communication from the plumber. It is only natural that he puts the bill on one side, with the inference that the plumber is doing too well, and has charged such a profit that he does not want the money.

As we do not live in an age when people need no reminder that they owe money for goods rendered, the plumber should make it a point to send out his accounts promptly, and if there is no immediate desire to settle, get after the delinquents, either by personal call or by letters. We know that the busy plumber has little time to attend to his accounts, and that if his customers only treated him fairly there would be no need to have to add to his work by collecting what is owing to him. But as it is necessary, then the only thing to do is to go after the money systematically.

As we have often pointed out, the plumber should not let the idea that he may offend a customer affect his getting after his accounts promptly. The man who means to pay does not mind a gentle reminder that he is behindhand with his money. He realizes that the plumber has to live, and when it is pointed out firmly but courteously that the money is wanted, then there is little fear that umbrage will be taken. If a man does take offence at the process, then the plumber may take it for granted that the man's trade is of little use to him, and that he is better off without the customer's name on his books than with it.

The getting in of collection is one of the most important parts of a business, and should receive the close attention of every plumber. The accounts should not be put off for a few spare moments, as is often done. They should receive the first attention of the plumber, for by them alone can he live.

The sending out of invoices, and the close scrutiny of the book, with a consequent close tab on those who are not settling, should be a regular part of the business system of a plumber. There should be no hesitation in getting after a long winded customer. Keep hammering and there are very few who will withstand the process for long.

GEORGE ROSS, BROCKVILLE,
Elected Chairman of the Sanitary Committee of the N.A.M.P.

OFFICIAL NEWS
N. A. M. P. & S. F. of CANADA

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Provincial Convention will be held at Toronto, Thanksgiving Day, Monday, October 31, 1910.

Next National Convention will be held at Port Arthur and Fort William about June 1, 1911.

N. A. M. P. SECRETARY ILL.

Lewis Legrow, secretary of the National Association of Master Plumbers, has been confined to his house for the past week or ten days, with a severe attack of grip. He is recovering, and will be about again in a day or two.

The Plumbing Business

As long as the plumber clings to his traps, tubs, pipes and wrenches with a mind rising no higher than the mechanical details of his trade, he will be merely a "plumber." This series of articles will deal more particularly with the business end and readers should derive benefit from reading them.

Written for the Plumber and Steamfitter by Charles H. Denison.

CHAPTER VI.

We hold a "grudge." No use in parroting about the matter and denying the fact, it always has been so, is so to a great extent today, and may, perhaps so continue to the end of time. When Jones got "the Squire's" job of heating by submitting a slightly lower figure, and also insinuating that he (Jones) had the better class of mechanics, you certainly got red in the face and swore that you would "get even if it took a year."

Now, in the first place, a man is a fool to lose his temper, for it gives the other fellow a distinct advantage at the very start. To let another person "get your goat" in such an easy fashion shows a certain lack of balance which does not point to the hilltops of success. No man can think clearly and to the best advantage when he is "mad." So I would not permit myself to be so little-minded. I would have more self respect and respect for the calling than to fly in a [illegible].

You say, "It's all easy enough to preach, but have you ever been there?" To which I can reply that I have, and can farther add that I never yet saw any good come from getting out of temper and also holding a grudge against a competitor. Going around and feeling "sore" all the time plays the very deuce with a fellow's business, and also will reflect, to a certain extent, on your customers.

The moment that you start out on the warpath to "put the other fellow out of business," you have started a campaign of vengeance, and I am here to state that punishment for injuries (real or fancied) is not listed among the principles of a square business. If you go to work and cut the price $50 below what you believe Jones would figure, and land the job, you have dealt Jones a dirty blow under the belt, you have handed the customer $50 that belonged to you, and greatest of all, you have cheapened in value of the job in the eyes of the [illegible]. This effect extends all along down the line and reflects, more or less, on [illegible] who make the goods which go to make up the completed heating or plumbing job. It does even further than that. It extends to the journeyman, and many times takes a slice out of his wages, for, sometimes, you are forced to either cut him down, or get a cheaper man.

To Fight is Foolish.

Now wouldn't it be more to the point, far easier, and more to the good of everybody and all matters concerned if, instead of fighting Jones and trying to put what business there was on the bum, we'll say that you and Jones rather pull together and seek to develop new fields, instead of flying at each other's throats like a couple of dogs in a street fight?

Why not extend the business, instead of separating it? I did not say "corner" it nor do I mean to insinuate that any should put their heads together and try to "bull" the market to an unfair price, but we are entitled to a fair profit for our efforts, and I am firmly against the policy of a man's cutting his own throat, or of his cutting mine, either, if I can help it.

Help your competitor to stay in the business rather than try to put him out of it. There is another line of policy that I want to talk about right here while we are on such subjects, and that is the treatment of the employes. Years ago the apprentice served some five years, and got about $75 a year. That day seems to have gone by; but in many cases the master expects the apprentice to start in for about $3 a week. I submit that that amount won't pay for the amount of food that a good, healthy boy of 18 or 20 will consume in a week's time.

You are asking a boy to start in and work for less than he would pay for the mere "eats" per week. Unless he lives at home, what in the Dickens is the lad to do? I believe that he is entitled to enough to support life and to cloth himself and have a little money to spend as he pleases at the very start. If you don't give it to him (no matter if he does make a few mistakes at the start) you have stifled his ambition at the very start and been the cause of his losing interest in the trade before he had fairly started in. How can you, or any one else, expect a "kid" to take unlimited interest in anything that does not pay him enough to settle for what he would eat?

The Journeymen's Pay.

A few words about the journeyman. I see that some of the scales call for $2.70 a day, or $16.20 a week. Now, if the work was steady all through the year, a man might perhaps manage to pull through on that, as the cost of living in Canada is less than in the United States. I have yet to see the place where the average number of the average men in our trade could get in 50 weeks in the year. So, if they become disgusted with such small wages and go west or into other lines of work, and men take their places who are not competent and bum jobs result, I don't much wonder at it. A man who can't earn from $3 to $5 a day in this business had better lay down the tools. A master who can't sell the goods and make a profit that would enable him to pay such wages had better get out of the business and sell peanuts. Get something sure that you can easily figure out exactly where you are at. A thoroughly competent set of journeymen is one of the very best assets that the master can possibly have and a few extra dollars, a little time spent in endeavoring to show that you have some of their interests at heart will bring the biggest kind of a return for the effort laid out. While you are the man who must do the worrying and foot the bills, he is the man who does all the lugging, gets all the hard blows, puts the wear and tear of his body into the business and he sure deserves all he is worth. Pay it to him as a strict proposition of honesty and don't, for Heaven's sake, put up that old song and dance of "advancement when he has proved his worth." If he has been at the trade any length of time, he's entitled to "realize" immediately.

This applies to the other members of the force that may be found necessary to conduct the business. Pay them a living price for their efforts. It's up to you to see that they do their work. That is part of your share of the work. It's what falls to you when you assume the business and to conduct it.

But don't brag about it. The man who really does run his business has so much to see to that he has no time to

monkey around shouting the thing to the housetops.

Whenever I see a man swell up, ram his hands down in his pants pockets and deliver the following: "By gad, I want you to know that I am the one who runs this business," I know that the man is a bluffer. You'll find such a party chasing around the corner several times a month to get more time on his paper in the bank, which proves that he does not run the business at all, but that the business actually runs him.

The more that we consider all these matters the more clearly we see that it resolves itself down to the question of the training of the "man behind the gun" and the necessity for a blamed good training for this man and also that the business actually demands that he have this matter of business education.

If there ever was a business that needs a thorough renovating and a cutting loose from the methods that have held it back until in some places it is about down and out, it is this same plumbing business of ours, which can be made one of the best paying investments of to-day if it is gone at in the right manner and with just ordinary good plain practical common sense.

Physics for the Steam and Water Fitter

Some Valuable Pointers in Natural Laws Simply Described by Chas. L. Hubbard in the Plumbers' Trade Journal.

The object of the following article is to explain in a simple manner some of the natural laws which govern the actions of heating systems of various kinds, and to show the practical application of such laws to the every-day problems in this line of work. Also to explain the meaning of certain terms which are commonly used in heating.

The Meaning of Pressure.

The term gauge pressure and absolute pressure are sometimes confusing, unless their exact meaning is clearly understood. The necessity of these two terms

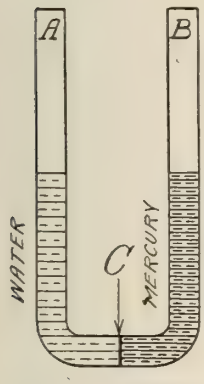


Fig. 1—Explaining circulation in a hot water system

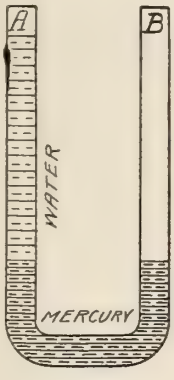


Fig. 2—Figure 1 with partition C removed

comes from the fact that a certain pressure is produced by the surrounding atmosphere (approximately 15 pounds per square inch). A gauge of the type commonly used only indicates the difference in pressure between the chamber or space with which it is connected and the atmospheric pressure.

For example, the actual or absolute pressure in a steam boiler may be 100 pounds per square inch, but the steam gauge will indicate only 85 pounds, because the pressure of the air is acting upon the outside of the tube and balances or effects an equal pressure inside the boiler.

The actual pressure which the air exerts varies somewhat, depending upon the elevation above the sea level and certain atmospheric conditions, but for all ordinary uses met with in power and heating problems it may be taken as 15 pounds per square inch.

From the above it is evident that the actual or absolute pressure in a boiler or other closed chamber is 15 pounds per square inch more than the pressure indicated by the gauge. In heating work the term pressure is commonly understood to mean gauge pressure unless otherwise noted.

Vacuum Defined.

The term vacuum means the absence of all pressure in a closed chamber, or 15 pounds per square inch less than the atmosphere. Vacuum, as used in heating work, means any pressure less than atmospheric. For example, 5 pounds vacuum means 5 pounds below the atmosphere, or 10 pounds absolute pressure. A vacuum heating system simply means one in which the steam circulates at some pressure below atmospheric.

Vacuum is usually expressed in inches instead of pounds. An inch of vacuum means a pressure per square inch equal to the weight of a column of mercury 1 inch square and 1 inch high. Five inches of vacuum corresponds to a pressure equal to the weight of a column of mercury the same size but 5 inches in height. The weight of a column of mercury 1 inch square and 1 inch high weighs approximately 0.5 pounds, hence a column 5 inches high weighs $5 \times 0.5 = 2.5$ pounds. In other words, 5 inches of mercury equals a pressure of 2.5 pounds per square inch, and 5 inches of vacuum means a pressure 2.5 pounds per square inch below atmospheric pressure, or $15 - 2.5 = 12.5$ pounds absolute.

Vacuum gauges are commonly made to read in inches of vacuum below atmos-

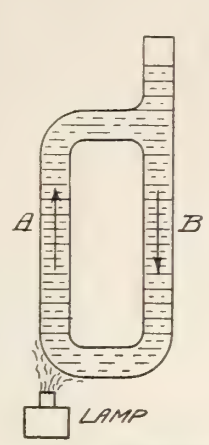


Fig. 3—Producing a circulation

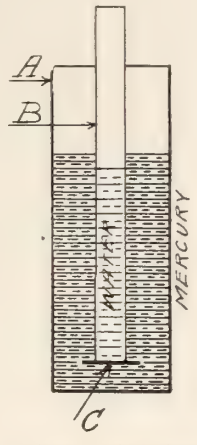


Fig. 5—Showing principle in warm air circulation

pheric pressure, and in pounds pressure above the atmospheric.

For example, if the gauge on a vacuum heating system reads 16 inches of vacuum, it means that the pressure is $16 \times 0.5 = 8$ pounds per square inch less than atmospheric pressure, or $15 - 8 = 7$ pounds absolute.

Pressure Head.

This is a term more commonly used in connection with water pressure, and is frequently employed in forced hot-water systems to express the pressure against which the circulating pump operates.

In this case the pressure is expressed in feet of water column instead of inches of mercury.

A column of water 1 inch square and 1 foot high weighs approximately 0.4 pounds, or in other words, a column of water 20 feet high weighs $20 \times 0.4 = 8$ pounds, and exerts a pressure of 8 pounds per square inch.

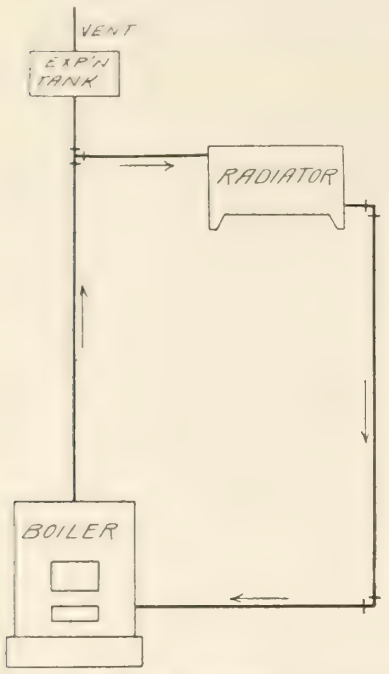
A knoweldge of this relation is useful in determining how high the water will rise in the return pipes at the extreme end of a line where there is a known drop in pressure.

That is, the water will rise 0.8 feet for each pound drop in pressure. A simple way to remember this, and one which is on the side of safety, is to count on 2 feet rise in water level for each pound drop in pressure.

Heat Unit.

The common use of the heat unit, or thermal unit (t.u.), in the various computations involved in heating problems makes it necessary to have a clear understanding of its exact meaning. A heat unit is the quantity of heat required to raise the temperature of 1 pound of water 1 degree.

For example, 10 t.u. will raise the tem-



ig. 4—Practical adaptation of continuous circulation

water weighs 8.3 pounds, then the amount circulated equals 8,500÷8.3=1,024 gallons.

A tank contains 500 gallons of water at a temperature of 180 degrees; if 400 gallons at a temperature of 100 degrees are added, what will be the temperature of the resulting mixture?

In the present case the first volume of 500 gallons=4,150 pounds. The temperature is 180—32=148 degrees above 32 degrees. Its weight is 400×8.3=3,320 pounds, and it contains 148×3,320=491,360 t.u. The second volume is 100—32=68 degrees above 32 degrees. Its weight is 400×8.3=3,320 pounds, and it contains 68×3,320=225,760 t.u. The total weight of the mixture is 4,150+3,320=7,470 pounds, and it contains 614,200+225,760=839,960 t.u. above the freezing point.

If 7,470 pounds of water contain 839,960 t.u., then 1 pound will contain 839,960÷7,470=112 t.u., which will evidently give it a temperature of 32+112=144 degrees.

Temperature.

While the quantity of heat which a body contains is expressed or measured in thermal units, the intensity of the heat is called its temperature. The temperature of a body or substance is measured by means of a thermometer, the Fahrenheit (F) scale being the standard in this country.

The graduations in this case are obtained by noting the position of the mercury column when the bulb is placed in melting ice, and again when placed in steam, which is being evaporated under atmospheric pressure. This difference in the heights of the column is divided into 180 degrees. The freezing point of this scale is marked 32 degrees, which makes the boiling point 32+180=212 degrees above zero.

In the French system the Centrigrade (C) scale is used. The freezing point on this scale is marked zero and the boiling point 100.

The methods of conversion are given in the following equations: C=0.55×(F—32). F=(1.8×C)+32, in which C is the reading in degrees centigrade and F the reading in degrees Fahrenheit. Sometimes formulas are given in which the Centigrade scale is used, so that it is often a convenience to have the methods of changing from one scale to the other at hand.

Latent Heat.

This is the heat which disappears when a solid is changed to a liquid, as in the melting of ice. At the instant the last of the ice is melted the temperature of the water is the same as that of the ice before melting, although a large amount of heat has been consumed in the process.

The changing of water into steam is another example of latent heat, being called in this case the latent heat vaporization. When water is changed into steam under a constant pressure there is no change in the temperature of the water or steam, although heat has been constantly passing into the water from the furnace. This is the law made use of in steam heating, as all of the heat is given out again when the steam is condensed in the radiators.

The steam is simply a vehicle for carrying a large amount of heat from the boiler to the radiators. In the case of stoves the heat is stored in the wood or coal and is in much more bulky form.

Hot Water Circulation.

The circulation in a hot water system is best explained by the use of a diagram, as in Fig. 1.

Let A and B be the legs of a U-tube, separated by a diaphragm at C. A is partially filled with water, and B with mercury, which is much heavier.

If the diaphragm C be removed, the mercury being heavier will fall to the bottom of the tube, lifting the water in leg A, as shown in Fig. 2. Hence, we see how the force of gravity may be utilized to lift bodies. If, in Fig. 1, A contained hot water and B cold water, the same action would take place in a similar manner, although not in the same degree, because there would not be so great a difference in their weight as before.

In this case the temperature in the two legs of the tube would soon be equalized through conduction and convection, resulting in an equalization of the weight of the two columns of water, and causing them to stand at the same level in a short time.

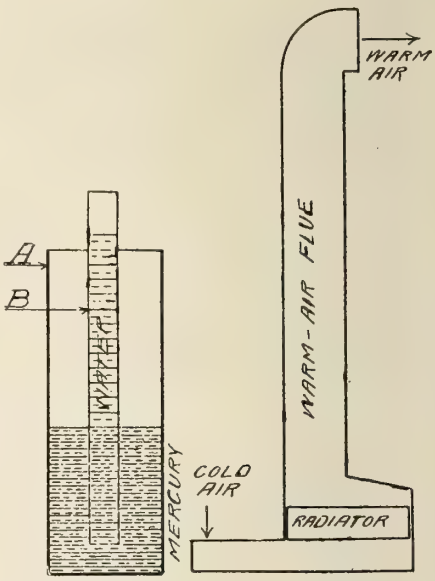


Fig. 6—Fig. 5 with partition C removed

Fig. 7—Construction of warm air flue

In order to produce a continuous circulation, the legs of the tube must be connected at the top and a lamp flame applied at the bottom of tube A, as shown in Fig. 3. By this means the temperature in A is maintained at a high point, while the water in the top connection and in tube B cools sufficiently to produce a slight difference in weight, causing it to fall. This raises the water in A, which flows across the top connection into B and takes the place of that which has just passed into A, thus producing a continuous circulation. The

transition of this device into a practical hot-water heating system is shown in Fig. 4.

The principle involved in the circulation of the warm air through the supply flues of an indirect steam or water system is illustrated in Fig. 5.

Let A be a vessel nearly filled with mercury, and B a tube closed at the bottom by a plate C, and partly filled with water. If now C be removed, the mercury surrounding the tube will flow into the bottom and lift the water, as shown in Fig. 6. In the case of a warm-air flue, the surrounding atmosphere replaces the mercury and the warm, and therefore lighter, air in the flue represents the water in the tube.

This in practical form is shown in Fig. 7. The steam radiator keeps the air in the flue heated, and the cooler and heavier outside air enters below the radiator and forces the lighter column in the flue upward and into the room above. This action will be kept up as long as steam is supplied to the radiator.

In the case of both the water column and the air column, the velocity of flow increases with the temperature difference and the height of the column.

SEWAGE DISPOSAL.

F. Wallis Stoddart, of the Western Counties Laboratory, Bristol, England, describes a sewage disposal plant erected at Long Ashton, near Bristol, for the purpose of purification and disposal of the sewage of the locality, which contains about 1,200 inhabitants. This plant, the invention of Mr. Stoddart, and erected under his supervision, appears to perform the work required in a very complete way, and where necessity requires the adoption of some method of purification of the sewage before it can be discharged into any stream or lake, it would probably be found most useful.

Mr. Stoddart's method is based upon "oxidation of the organic constituents and their conversion into stable products incapable of putrifaction. In order to enable the appliance used to this end to do its work satisfactorily, it is essential that but little undissolved solid and that only in a state of impalpable division should be suspended in the liquid presented to it. In other words, the entire process consists of clarification followed by oxidation."

VENTILATION LAWS.

The Heating and Ventilating Magazine, 1123 Broadway, New York, has issued a second edition of the booklet "Ventilation Laws," published by them at 20 cents. It contains the laws governing ventilation in Massachusetts, New Jersey, New York, Pennsylvania, Illinois, Utah, Virginia, Connecticut, Minnesota and Vermont.

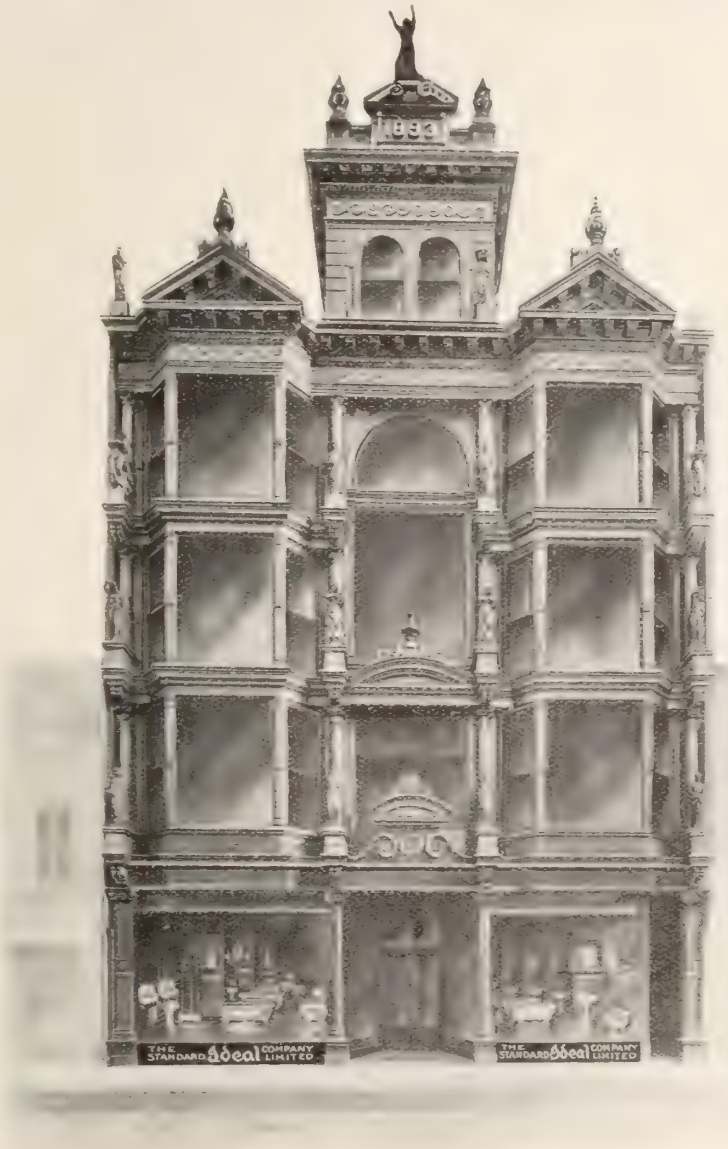
HANDSOME SHOWROOMS.

The new showrooms of the Standard Ideal Company, 115 to 121 King Street, East, Toronto, are nearing completion and from appearances will far excel any showrooms in any Canadian city. The Company have the entire ground floor for showrooms and offices, with a large space over the offices where tables are provided for customers who desire to confer with clients.

The new premises have been remodelled with the aim in view of enabling architects and master plumbers to bring clients to inspect the variety of fixtures manufactured, and select those best suited for their particular needs. And there is no better way to induce a client to purchase high-grade materials than to allow him to personally inspect and see demonstrated the fine "Alexandra" porcelain and cast iron enameled ware on display in the Standard Ideal showrooms. All fixtures are priced in plain figures, but the master plumber is protected by the company.

In connection with the location in the new premises, the Standard Ideal Company have issued a handsome booklet announcing their removal and inviting all in the trade to visit the warerooms at their first opportunity.

A. D. McArthur, Ontario sales representative, who is in charge of the Toronto branch, is to be congratulated upon the excellent manner in which he has [illegible] premises.



Handsome New Toronto Showrooms of the Standard Ideal Company.

Plumbing Regulations of the State of Maryland

Clauses Relating to Plumbing Work Added to the "Health" Act of the State of Maryland, Endorsed by the National Master Plumbers' Association of the United States.

At the convention of the National Master Plumbers' Association of the United States held in Chicago last June, the Legislation Committee submitted in its report a copy of seven sections to be added to the existing "Plumbing" and "Health" acts in force in the State of Maryland, and after the committee's report had been read the convention adopted the following resolution:

> "Be it resolved by this convention that bill S-6049 is hereby endorsed by the National Association of Master Plumbers and that all members of this organization be requested to use their efforts in obtaining its passage, and that we give the author our unqualified endorsement."

THE AMENDED LAW.

An Act to amend Article 43 of the Code of Public General Laws of Maryland (Code of 1904), Title "Health," by adding to said article seven sections under the subtitle "Plumbing," to be known as sections 184, 185, 186, 187, 188, 189 and 190.

Section 1. Be it enacted by the General Assembly of Maryland, that Article 43 of the Code of Public General Laws of Maryland (Code of 1904), title "Health," be and the same is hereby amended by adding seven sections thereto under the sub-title "PLUMBING," to be known as Sections 184, 185, 186, 187, 188, 189 and 190, and to read as follows:

Plumbing.

184. It shall not be lawful for any person, firm or corporation to employ as workmen to do plumbing work in the State of Maryland, any persons except those qualified to work at the plumbing business, as provided in this sub-division of this Article, and no person shall be qualified to work at the plumbing business in this State, except he has made application and received from the State Board of Commissioners of Practical Plumbing, the certificate of competence described in Section 186 of this Article, and is otherwise qualified as required by this sub-division of this Article. Any person or firm engaged in the plumbing business in this State, and the superintendent, manager, agent or other officer of any corporation engaged in the plumbing business in this State, who shall employ any person to work at the plumbing business who is not qualified as required by this sub-division of this Article, shall be guilty of a misdemeanor, and upon conviction thereof shall be fined not less than ten dollars and not more than fifty dollars for every day or part of every day that such employer shall employ such workman. And any person or firm not engaged in the plumbing business in this State, and the superintendent, manager, agent or other officer of any corporation not engaged in the plumbing business in this State, who shall employ any person to do plumbing work in this State, knowing the person so employed is not qualified to work at the plumbing business as required by this sub-division of this Article, shall be guilty of a misdemeanor, and upon conviction therof shall be fined not less than ten dollars nor more than fifty dollars for every day or part of every day that such employer shall so employ such workman.

185. If any person shall work at the plumbing business in this State without being qualified as required by this subdivision of this Article, he shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined not less than five dollars nor more than fifty dollars for every day or part of every day that such workman shall work at the plumbing business.

186. The Governor shall appoint biennially five persons who shall constitute a Board of Commissioners, which shall be known and designated as "The State Board of Commissioners of Practical Plumbing," and who shall be selected as follows: Three persons who are practical and skilled plumbers from the City of Baltimore, the Commissioner of Health, of Baltimore City, and a member of the State Board of Health from the State at large, whose duty it shall be to faithfully and impartially execute, or cause to be executed, all the provisions and requirements of this sub-division of this Article; upon application and at such place or places in this State as they may determine, provided at least once in each year the examination shall be held in Baltimore City, they shall examine each and every person who shall desire to work at the plumbing business, touching his competency and qualifications; and upon being satisfied that the person so examined is competent and qualified to work at said business, they, or any three of them, shall grant to such person a certificate of competency, and register him in their books as a practical plumber, which shall operate as full authority to him to work at, conduct and engage in the said plumbing business for the period for which such certificate shall be granted, and such certificate may be called or designated by said Board a "Master Plumber's certificate."

187. The said Board of Commissioners shall demand and receive from such applicant for a certificate of competency whom they examine and pass the sum of three dollars at the time of the issuance of said certificate, and the sum of one dollar for the renewal thereof each and every year thereafter, on or before the first day of May, and said board, at any time, may require, on any application for renewal, any applicant to pass another examination before issuing any renewal, or may issue any renewal without requiring any other examination, as said board in each case, from year to year, may deem proper.

188. The money received under the provisions of the foregoing section shall be used and applied by said commissioners to pay their compensation and all their expense, costs and fees as they may incur and which they are hereby authorized to incur out of the money so received by them, in investigating any alleged violations of the provisions of this sub-title, and in aiding in the prosecution or procuring testimony to aid in the prosecution of any alleged violations of any of the provisions of this sub-title, and in generally enforcing and making effective the provisions of this sub-title; and all surplus over and above their compensation and their expenditures as hereinbefore and hereinafter provided, shall be paid to the state treasurer for the use of the state.

189. Said commissioners shall hold their several offices for the period of two years, commencing the first day of May, 1910, and thereafter until their successors have been appointed and qualified; each commissioner within thirty days after notification of his appointment shall take and subscribe the oath or affirmation required by law before the Clerk of the Superior Court of Baltimore City; every person appointed commissioner who shall refuse or neglect to take said oath or affirmation within the period named shall be deemed to have refused said office, and the Governor shall immediately appoint some person qualified, as provided in Section 186 of this Article, to fill the vacancy thus created; each of said commissioners shall receive the sum of five dollars for every day that he shall attend any trial in any court of any kind in this state or before any justice of the peace of this state, with reference to the execution of this law or the prosecutions of any violations thereof, and for every day that he shall be present at a meeting of said board for the transaction of business, and shall

further receive his reasonable traveling expenses in attending meetings of said board, provided that said compensation shall be paid out of the fees or other sums received by said board.

The present State Board of Commissioners of Practical Plumbing under the local laws of Baltimore City shall continue in office, with all the powers and duties heretofore held by them in Baltimore City, until the commissioners authorized by this Act to be appointed shall be appointed and qualified, and thereupon the duties and authorities of said board under the local laws of Baltimore City shall be at an end, and they shall turn over all books and papers, and any balance of money received by them and not expended by them, to the board appointed under the provisions of this Act; but nothing herein contained shall be deemed in any way to affect or alter any act heretofore done under the provisions of said local laws, or to effect the punishment for any violations of said local laws, and all violations of said local laws, before the same shall be superseded by this law, shall be punishable in the same manner as if this law had not been enacted.

190. The said board of commissioners are empowered to make such rules and regulations for the enforcement of the provisions of this Act and for the performance of their duties hereunder, from time to time, as in their judgment they may deem necessary and requisite; and they may provide for the examination of applicants for journeyman plumber's certificates or permits and for the issuing of certificates or permits to journeyman plumbers after passing such examination as said commissioners may deem proper, said commissioners designating them either "certificates" or "permits," as they may deem proper, and they may provide for the issuing of permits to apprentices, so that, however, said journeyman plumbers and said apprentices shall be authorized to work only under the direction and control of a duly certified master plumber; and that said certificates or permits shall be so framed as to show that said journeyman plumbers and said apprentices are authorized to work only as provided above. Said board may demand and receive from each journeyman plumber the sum of two dollars at the time of the issuing of the first certificate to said journeyman plumber, and the sum of one dollar for the renewal thereof each and every year thereafter, on or before the first day of May, and said board, at any time, may require, on any application for renewal, any applicant to pass another examination before issuing any renewal, or may issue any renewal without requiring any other examination, as said board in each case, from year to year, may deem proper; but no charge shall be made for the issuing of permits or renewals of permits to apprentices. Said commissioners may fix the requirements of the competency and qualification of applicants, whether of master plumbers or of journeyman plumbers, at different standards, in their judgment, for different parts of the state, and may accordingly limit the certificates so as to permit the holder thereof to do plumbing work only in certain specified sections of the state, as said commissioners may determine. Whenever by any of the general or local laws of this state it is or shall be provided that a permit shall be granted to anyone qualified to work at the plumbing business or to do plumbing work, however, the same may be designated, or that certain appointments shall be given to or certain duties shall be performed by one qualified to do plumbing work, or any other reference is made to one qualified to do work which shall be included under the term "plumbing work," however, the same be designated, then such general or local laws shall be held to refer only to one qualified to work at the plumbing business under his own direction; that is, one holding a certificate authorized to be called a "Master Plumber's Certificate," and shall not be held to refer to a journeyman plumber or to an apprentice. Said commissioners may revoke any certificate or permit which, after notice to the holder and hearing, they may determine has been obtained by fraud or misrepresentation, or has been issued by mistake or inadvertence, and said commissioners may revoke or suspend, for such time as they may deem proper, the operation of any certificate or permit when the said commissioners, after notice to the holder and a hearing, shall determine that the holder thereof has used such certificate or permit contrary to the provisions of this sub-title, or to any rules or regulations of said commissioners adopted in pursuance of the provisions of this sub-title, or contrary to the limitations contained in said certificate or permit, or has violated any of the provisions of this sub-title. Nothing in this Act shall be construed to prevent incorporated gas companies from making connections of gas appliance for domestic purposes.

Section 2. And be it enacted, That this Act shall take effect from the date of its passage.

Approved—April 11, 1910.

Port Arthur ratepayers a week ago carried a by-law authorizing an agreement to be made with Robt. Greig, Toronto, whereby, for a grant of a site, his company, a branch of the Ironclad Co., of New York, will establish enamel works there to employ not less than 200 men.

TRADE TALES

GROWN BEYOND RECOGNITION.

E. D. Higginbotham, the treasurer of the National Master Plumbers' Association, who was taken ill of blood-poisoning while attending the recent convention at Toronto, has recovered again as will be seen by his presence with the automobile party, composed of E. D. Higginbotham, A. Cameron, J. Macerae, D. McCallum, W. Sime and D. Byers, Attorney for the Fort William and Port Arthur plumbers, shown in the accompanying picture.

A story is told of the fat treasurer which will bear repeating. On his way down to Toronto, a lady who had just entered the train, thought she recognized him and came over to speak to him.

THE AUTOMOBILE WAS FULL.
A bunch of Port Arthur and Fort William Plumbers out for a good time.

"Isn't this Eddie Higginbotham?" she said.

Ed. is a little hard of hearing and not recognizing the lady he hesitated about replying.

"Isn't this Eddie Higginbotham?" she repeated, "and didn't you go to school in Toronto?

"Yes, Ma'am," he replied.

"Don't you remember me? I used to be Miss Terry, your school teacher?"

"Ma'am?"

"Don't you remember Miss Terry, your school teacher?"

"Ma'am?"

"I used to be your school teacher in Toronto. Don't you remember me? Many's the time I've spanked you."

Ed. failed to grasp the full meaning of the lady's remarks, but replied, "Oh, yes, ma'am, but you wouldn't know the place now—it's grown so."

The Question Box

Subscribers are Urged to Send Questions to be Answered, or to Comment on Letters Published. Descriptions of Jobs Done or Shop Kinks are Also Invited.

ENAMEL PAINTS CONSIDERED BEST.

Editor Plumber and Steamfitter,—There seems to be a difference of opinion as to the relative values of paint as against that of bronze for decorating radiators. The writer's experience is that where bronze powder is used that it undoubtedly decreases the efficiency of the radiators. The writer would give as his explanation of this that the bronze fills in the pores of the iron so that the iron does not readily yield or give off its heat, and the efficiency of any radiator, whether steam or hot water, is based upon the number of heat units that it will give off per square foot of radiating surface per degree of temperature difference.

Where paint is used the writer does not believe that it fills in the pores of the iron, rather coating the surface of the radiator, enabling it to yield its heat more readily than where bronze paint is used. This condition is not theory but has been proved by actual test. Enamel paints are undoubtedly the best things to use in decorating radiators. Exhaustive tests have proved this fact.

As far as the action of linseed oil or shellac I do not think these would contend or have any action whatever on the surface of the radiator, as both these liquids dry and evaporate. I regret very much that I have not the data available to prove the facts that bronze decreases the efficiency of the radiators where white enamel paint has in some cases shown an increase over that of bare iron. An explanation of this I am unable to give you.

MACDONALD & SONS, LTD.
Per A. L. Macdonald.

Toronto, Sept. 30.

FAVORS BRONZING RADIATORS.

Editor Plumber and Steamfitter,—In our experience radiators when bronzed mixed in bronzing liquid will give greater effect as heating surface than will radiators painted with colors ground in oil and diluted with turpentine and dryers, although the percentage of difference is not very great and would not be seriously considered by a heating engineer when figuring up the quantity of radiation required to heat a building where radiators are to be decorated. We would not encourage the use of linseed oil, as paint mixed with linseed oil will not dry on iron. Shellac is not a good medium as it fills up the pores in the iron and leaves a glossy smooth surface. Paint mixed with dryers leaves a glossy finish, but if they dilute it with turpentine it will take the gloss away and leave a dead color which I think is better for house decoration as a bright glossy finish detracts from the furnishings and sets out the radiator too prominently.

ADAM TAYLOR,
Sec. Taylor-Forbes Co.

Guelph, Sept. 23.

DARK BRONZE BEST CONDUCTOR.

Editor Plumber and Steamfitter,—We think that bronze is a better conductor of heat than paint of any kind, as the lead in the paint kills off the conducting power of anything that is metallic.

We are given to understand that dark bronze or common iron filler is the best conductor of heat. We therefore believe, that the nearer you keep to the nature of the cast iron the better the radiator for heating purposes. We understand that light paint and whitewash become very poor conductors of heat.

THE GURNEY-TILDEN CO.
W. H. Carrick, Manager.

Hamilton, Sept. 23.

USES OF VARNISH PAINT.

Editor Plumber and Steamfitter,—I have never yet seen any authority in regard to the obstruction of heat radiation between paint, bronze or varnish, but, have always understood through reading recommendation of heating engineers to use as little oil in paints for heating surfaces as possible, and have always as far as possible used a varnish paint on account of its hardness as being the least obstruction to heat radiation. Still personally I don't think the difference between one or the other as a coating for radiation or heating surfaces is perceptable unless carelessness is used in overloading the surface with either.

PERRY, MANSELL, LTD.
Per Wm. Mansell.

Toronto, Sept. 29.

BRONZE BETTER THAN WHITE PAINT.

Editor Plumber and Steamfitter,—With reference to the desirability of painting or bronzing radiators, and the effect in radiating heat from same, we would give the following reply.

It would appear in a general way the character of the surface affects the heat given off by radiation only, and not that given off by convexion. In ordinary cases of direct radiation, because the surfaces are closely massed together, the radiant heat does not probably exceed on an average of 40 p.c. of the total emitted, and is nothing in indirect heating.

It would appear if we consider the radiant heat given off as 100 from a new surface of cast iron, that from wrought iron would be 87. From surface coated with soot or lamp black 125, from a surface with a lustre like new sheet lead, 20½ and from polished silvered surface 13½.

With a factor of 40 p.c. as representing the radiant heat we would have the following numbers as representing the various surfaces.

Cast Iron, new	100
Wrought iron	93
Dull lamp black	106
Rusty surface	102
Bright iron surface	72
White lead, dull	106

We have found by general experience that two coats of black asphaltum paint increased the amount 6 p.c. Two coats of white lead 9 p.c., and a rough bronzing give about the same results as black paint. On the other hand a coat of glazed white paint reduced the amount of heat emitted about 10 p.c.

Thus, you will see in summing up in answer to your enquiry, your answer to the correspondent would be correct provided paints as above set forth were used. If, however, white paint was used, bronzing would certainly give better results.

BENNETT & WRIGHT CO., LTD.
Per Geo. Clapperton.

Toronto, Oct. 10.

UNPAINTED COILS MOST EFFICIENT.

Editor Plumber and Steamfitter,—There is nothing so efficient as an unpainted coil or radiator. This has been

gone into thoroughly by the "Stevens Institute of Technology," while an exhaustive paper on this subject was read by Jno. R. Allen, Ann Arbor, Mich., at a meeting of the American Society of Heating and Ventilating Engineers, at Indianapolis, July 15-16, 1909.

J. W. HUGHES & SON.

Montreal, Sept. 23.

COMMENTS ON HONEYWELL JOB.

Editor Plumber and Steamfitter.—I take this occasion, as per the request of Mr. "J. I. C." in your September 15 issue, to ask a question. He states that the connections (I suppose that he refers to the branches from the main to bottom of the riser) were made according to the sketch that he submits, labeling the same in sketch as "D" in the plan submitted and published by you.

What I desire to ask is, if all the branches were run after that manner? From the reading of Mr. Honeywell's descriptions in his catalogues, I had thought that the "D" connection was used only on the branches that were nearest to the boiler, and for the purpose of not robbing the main of the hot water that flows along its top when the fire is first started. Then, a little ways farther down the line, the connections would be taken from the side; while on farther still they would be taken from the top at an angle of 45 degrees, and last of all, taken directly from the top of the hot water main in the branches that received the last of the circulation.

Now, if Mr. "J. I. C." had taken his whole number of branches directly from the bottom at an angle of 45 degrees (as shown by his drawing) I would like to know it, also the amount of radiation in the job and the number of tons of coal that were burned by the plant during the last winter. I believe that the foregoing facts would add greatly to the interest and usefulness of his article, which, I think, you should publish once more in the paper for the good of all.

"Steamfitter."

Hamilton, October 3.

MATERIAL FOR TANK LININGS.

Editor Plumber and Steamfitter.—I am going, soon, to have to line a large tank that has been built in the attic of a job that I am to do, and I would like to ask you as to the best material to use in so doing. In what manner could I get a line on the thing so as to be sure and made no mistake in the choice? Waiting a speedy answer, I am, very truly,

"John C."

Vancouver, September 30.

Such tanks as our correspondent describes are generally lined with either copper or lead, depending somewhat, we believe, upon the quality of the water in that particular locality. If we were to go at this job for ourselves and wished to be dead sure that no mistake would be made in the choice of the proper material, we should make it a point to visit as many tanks of a similar nature as we could find in the town or city and observe how these tanks had stood the test of time and with what they were lined. We believe that we would then be in a position to make a decision in the matter with some degree of sureness and certainty. In order to be absolutely sure in the matter, after this had been done, samples of the water might be submitted to some first-class practical chemist, who would be able to inform you in regard to the chemical action of the water upon the different materials and you would then, we believe, be made doubly secure in your choice.—D.C.H.

PAY FOR LOST TIME.

Editor Plumber and Steamfitter.—There is hardly a man engaged in the plumbing and heating business but what figures on and loses fully as much work as he succeeds in landing, and for this work that he spends so many weary hours figuring out what the job will cost, he does not get a red cent. Does the lawyer or the doctor do the same thing? Well, hardly. Go to one for an opinion or a perscription and see what you will be taxed. For my part, I fail to see just why that the master plumber or master fitter should do all this work "free gratis." I should like to have an opinion from you on the subject, and also from any others who are interested in it.

"Kicker."

Toronto, October 1.

We believe that Mr. "Kicker" is right as far as to the masters figuring on a large amount of work that they do not secure, but that they do not get pay for the same is entirely their own fault, inasmuch as if they fail to get compensation for this work that they do not "land," it is because that they do not know (or perhaps care) what their overhead expense amounts to. This time spent in estimating is a legitimate charge and should be added to the overhead expense. If it is done, the master will receive pay for the time spent figuring whether he lands the job or not. Perhaps some others may take a different view of it, but that is the way in which we should look at the matter.—D. C. H.

JOURNEYMEN'S EXAMINATIONS

Editor Plumber and Steamfitter:—In your issue of October 1, I notice a few articles on Examination of Plumbers which I think are worthy of notice to the trade in general. The masters want good mechanics and the journeymen want to be classed as such.

A few years ago when the two associations were working hand in hand, all apprentices taking the tools were compelled to pass an examination board composed of representatives from the masters and journeymen. But the masters failed to have their man on the job so often that we decided to continue on our own hook and all applicants to join our association must pass an examination according to our constitution.

We find in many cases that the masters will always [illegible] are the first to give the apprentice tools as soon as he is able to measure and thread a piece of pipe, starting him at gas fitting or water-piping and sometimes putting in soil pipe. He becomes proficient at these jobs and is kept at same getting no chance to do any lead work or wiping with the result that at the end of his five years he is of little use to the trade. In fact he is a botch mechanic and if he cannot get a job as a journeyman he starts in business as a cheap John, being a hindrance to both master and journeyman. A civic examination would put a stop to this evil.

Our city by-laws call for such an examination and the law was enforced about 1889. It has never been revoked and is simply laying dormant like a good many more by-laws which are never enforced.

In the United States it is vastly different. Most all the different states have a state examination and also many cities and you have to pass both before you can start in business or work as a journeyman.

It is up to both sides in this city to get busy and bring the trade up to the standard that it is justly entitled to.

Just a few more lines in reference to your paragraphs re trade schools and technical education, in my opinion, the first named should be banished once and for all as they are of no material benefit to the trade. Technical education is what is needed to give us better mechanics in connection with the practical part which can only be obtained by serving a stated apprenticeship at the trade. It is a well known fact that no first-class mechanic was ever turned out of a trade school or by attending a technical school. He must work at the trade in the regular way.

Toronto, Oct. 4. Journeyman.

The Harry Hicks Co., 137 Church Street, Toronto, have purchased the electrical stock of the late T. L. Hicks, and A. Brooks, for fifteen years with T. L. Hicks, will take charge of the electrical branch of the Harry Hicks business.

Isaac Boucher, tinsmith, St. Scholastique, has assigned.

Henry Andersen, tinsmith, Indian Head, Sask., is discontinuing business.

Lacey, Hargrave & Co., dealers in electrical supplies, Regina, have dissolved.

A plumbing and tinsmithing business has been started at Chilliwack, B.C., by Chas. Hood.

E. Hoyt Gurney, sales manager of the Gurney Foundry Co., Toronto, has returned from a trip to the Pacific Coast.

F. A. Cowan, master plumber, Bloor and Bartlett Streets, Toronto, is suffering from an attack of typhoid fever.

A permit has been issued to the Canada Metal Co., Toronto, for a $5,000 extension to their Fraser Avenue foundry.

C. W. Fortune has left the services of Shiells, Ltd., Galt, and has engaged with Bennet & Wright, as heating engineer.

A record breaking day for the free showers at the Harrison baths, Toronto, was that of Oct. 7, 1,714 people taking advantage of them.

Harry Mahoney, treasurer of the N. A.M.P., accompanied Mayor Hastings, of Guelph, to Toronto this week. Harry is an alderman in the former city.

M. J. Hallorn has withdrawn from his partnership in the Bowman Gas Range Co., Toronto. Mr. Bowman continues sole owner.

The following contracts for the erection of a presbytery for the parish of St. Basile, Que., have been awarded: plumbing, heating and roofing, Jos. Laurier; electric wiring, C. Lapierre.

J. W. Bruce, who represented the Toronto plumbers' union at the recent international convention at St. Paul, has been elected general organizer of the International body. This is the first time a Canadian has been chosen.

T. McAvity & Sons, St. John, will establish a branch of their works in Montreal. Negotiations are on for a suitable site with exemption of taxes. Taken in connection with the new site secured at Port Arthur, this means an important extension of this firm's trade.

C. J. Lemier, plumber, Wetaskiwin, Alta., has the contract for installing the plumbing in the new Driard Hotel at that place. Mr. Lemier only recently opened up his business at Wetaskiwin.

The Canadian Tube & Iron Co., Montreal, capital $1,000,000; has been incorporated to manufacture steel, iron and other metal pipes, etc. The incorporators are: G. V. Cousins, P. F. Brown and S. T. Mains, Montreal.

The Toronto Board of Education granted the following contracts for work in Annette street school, that city. Steamfitting, Fred. Armstrong, $8,200; heat regulaters, Johnston Temperature Regulator Co., $400; plumbing, Fred. Armstrong, $1,554; electric wiring, Geo. Beattie, $80.

Keith & Fitzsimmons at $4,913 have the contract for heating and ventilating the new McMurrich school, Toronto. Fred. Armstrong will do the plumbing, at $1,318; Geo. Beattie the electric wiring at $60; and the Johnston Temperature Regulator Co. will supply heat regulators at $670.

R. B. Rice & Sons, real estate agents, Toronto, are suing the James Morrison Brass Company for $750 as commission on a sale of land on York street. The price paid for the land was $30,000. Defendants claim they secured the purchasers themselves and therefore there is no commission due to plaintiffs.

Adam Hall, for 32 years a hardware merchant and stove specialist at Peterborough, is giving up that business for the purpose of carrying on a plumbing and heating business on a large scale. He has erected a foundry for the manufacture of many of these lines as well as galvanized iron and tin work.

Edwin Newsome, Ottawa, has been awarded the contract for plumbing and heating for Dr. Robinson's nineteen-suite apartment house at Ottawa, and for the re-construction of the heating system and the instalation of two large steam boilers in the Perley Home for Incurables. He has on hand the plumbing and heating for Mr. West's stores and apartments, on Rideau Street, and for Lt.-Col. Rogers' new residence, on Rideau Street.

The Oakville, Ont., town council passed additional by-laws to raise $20,000, by debentures for further extending the present waterworks system.

Tenders for the work on the new school building to be erected on Manning avenue, Toronto, were recommended to the board for acceptance as follows: Plumbing, Fred Armstrong Co., $575; heating, J. R. Seager, $5,450; heat regulating, Johnston Temperature Regulating Co., $825; electric wiring, Fred Armstrong, $60.

Frank Webb, city traveler for the James Robertson Co., Toronto, and J. H. Berry, a plumber of that city, left on Friday for a week's shooting at Rice Lake. They were to reach the lake at midnight so as to be ready for the ducks just as soon as the sun rose on the 15th. They expect to clean up all the birds on the preserve, and leave nothing for the late comers.

Several of Brandon's big business blocks are now furnished with heat by the electric light company's heating system from the central station. The laying of the mains for this system are completed and the connections with the different blocks in the district covered by the heating system are being made.

Fred Armstrong, Toronto, has secured the plumbing contract for $1,554 and the steam heating for $8,200 on the new Annette Street public school. Also the plumbing in the McMurrich school for $1,318, the Keith & Fitzsimmons Co., securing the heating in this school for $4,913. The Johnson Temperature Regulating Co. secured both schools, the former for $400 and the latter for $670.

The Goderich Organ Co.'s factory at Goderich, Ont., was badly damaged by fire on October 1. The loss is placed in the neighborhood of $75,000 with insurance of about 80 per cent. of that figure. The company make a number of the casings for Ontario manufacturers of plumbers' supplies, and the fire was a serious matter for most of them. The manager, Alex. Saunders, intends rebuilding immediately, and in the meantime temporary working quarters will be secured. This is the third fire the company has been through in 20 years.

TORONTO MASTER PLUMBERS' MEETING.

One of the best meetings of the year was the last fortnightly meeting of the Toronto Master Plumbers' Association, held on Thursday evening, October 13. From the time President Cooper took the chair until the close of the meeting there were many topics of interest before the board. Nearly fifty members were in attendance.

Harry Pepper presented his committee's report on the working of the Durham system. The letters received from United States centres were ordered on file, and the thanks of the association were tendered Plumber and Steamfitter for the assistance rendered in securing the information.

The report of the ways and means committee was read by G. F. Frankland. While it was only of a "progress" nature, the report contained much food for thought for the members.

The baseball committee, which had looked after the outings of the association during the summer, was re-elected an entertainment committee. The meeting gave this committee authority to draft a programme for submission at the next gathering of the association. It is likely that a series of euchre games will be played during the winter months and that a set of prizes will be offered for competition. The programme arrangements are in the hands of A. Passmore and G. F. Frankland.

DAVE MENZIES HITTING THE BALL

The Ty. Cobb of the Master Plumbers Caught Hitting a Homer.

Some mention having been made of the King bill and R. M. A. bill, George Gibbard, local secretary of the R. M. A., made a lengthy and lucid speech, explaining the meaning of the various clauses of these two measures, which have to do with trade and trade combinations, showing wherein such combinations were legal and illegal.

President Geo. Cooper read a detailed statement of the receipts and expenses in connection with the late convention. He stated that all bills had been paid two days after the convention's close and that there remained a balance of nearly a hundred dollars.

The secretary was instructed to forward a letter of thanks to the travelers representing the supply houses for their entertainment at Diamond Park on September 17.

ACCEPTS NEW POSITION.

Fred E. Ellis, who represented the Gurney Foundry Co. for four years, and the Gurney-Tilden Co. for nearly two

Fred E. Ellis, Toronto.

years, in western Ontario, has resigned from the latter company to accept a position with Albert Welch & Son, Toronto, in whose hardware and stove store he learned his first lessons about hot air and hot water heating.

In his new position Mr. Ellis will have charge of the outside work, supervising the instalation of heating plants and calling on the trade in the city on behalf of the jobbing department of the firm's business.

During the five years spent on the road in western Ontario Mr. Ellis has made some warm friends, who will be glad to learn of his acceptance of and success in the new position.

KING RADIATOR PLANT SOLD.

Definite announcement has now been made of the completion of the organization of the Steel & Radiation Company, Limited, referred to in Plumber & Steamfitter of Aug 15.

At a meeting held on Sept. 31, arrangements were completed for the taking over by the new company of the plants of the King Radiator Company and the Expanded Metal Co., both located in Toronto, and on Oct. 5 the deeds concerning the transfer were registered. The companies will continue for a time, however, under their former names, and for the present the order department of the King Radiator Co. will be maintained at the St. Helens avenue plant, and the sales office will also be continued at Lombard street. The business and accounting departments, however, have been transferred to the head office of the new corporation, at the Expended Metal Company's works on Fraser avenue.

The capitalization of the new company is $5,000,000, one-fifth of which goes to the promoter, G. H. Brown, for promotion purposes, and the balance, it is planned, will be issued as additional companies are taken in. Negotiations are now on with two companies manufacturing for the building industry, to join the merger. The officers of the new company have not as yet been announced, by R. J. Cluff, formerly manager of the King Radiator Company, is to be general manager of the combined companies, and S. W. Howard, former secretary of the King Radiator Co., is secretary-treasurer. The board of directors and officers of the permanent organization will be named in about a month, it is expected, a director being added to represent each plant taken in. Already, however, Col. Sir Henry Pellatt and Hubert M. Macrae, of Toronto, have joined the permanent board.

The new corporation purposes to acquire other plants at present existing or to be built in Montreal, Winipeg and other centres, but behind the present merger a still larger consoldiation is in contemplation. It is said that the Ontario Iron and Steel Company declined to enter the Steel Company of Canada $25.000.000 merger, the men interested having in view the formation of another big consolidation of iron and steel producing and consuming concerns, the present Steel and Radiation Co. being merely the first step towards the ultimate aim, just as the merging of half a dozen companies into the Canada Bolt and Nut Company was a step towards the Steel Company of Canada merger.

It is claimed that many advantages will accrue from having a consolidation of concerns such as the Expanded Metal and King Radiator companies, and that there will be savings made in buying, and by using the same sales staff for selling the products of both companies, all of which are used in the building industry, and specified by the same architects. Ultimately, there will also be savings in manufacturing by having the same company control iron furnaces, and subsidiary companies which would use the products of the furnaces.

Gurney Foundry Company Honors Retiring Manager

W. H. Carrick, for 36 Years With the Gurney Foundry Company, Tendered a Complimentary Dinner and Presented With a Cabinet of Silverware, on Leaving to Accept Management of the Gurney-Tilden Company, Hamilton.

About one hundred guests assembled at the National Club on the evening of Friday, Oct. 7, on the invitation of Mr. Edward Gurney, president of the Gurney Foundry Company, Toronto, to meet Mr. W. H. Carrick, who recently resigned as general manager of the Gurney Foundry Company to become president and manager of the Hamilton Stove and Heater Company, successor to Gurney-Tilden & Co., Hamilton.

EDWARD GURNEY,
Who Made the Presentation to Mr. Carrick After 36 Years of Loyal Service.

The guests included representatives of the office, sales and factory staffs of the Gurney Foundry Company, representatives of the trade press, and business and personal friends of the guest of the evening.

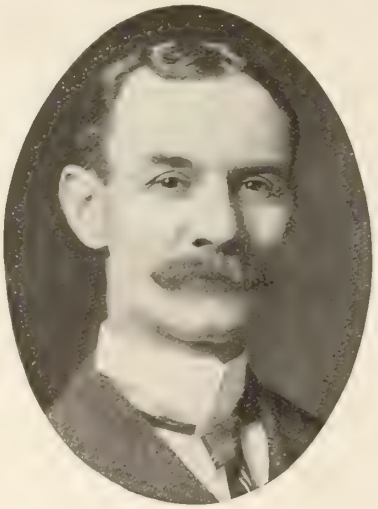
After an appetizing menu and the contents of a song sheet had been disposed of, the former putting the inner man in good humor while the popular songs brought the company into closer harmony "The King" was honored in usual style.

HUGH GURNEY,
Gurney Business.

The last song on the vocal bill of fare closed with :

What's the matter with father, he's all right,
What's it matter if father's hair is white ?
I'm very strong for the other sex,
But Dad's the fellow that sends the checks,
What's the matter with father, he's all right.

This brought Edward Gurney to his feet, and he said it gave him exceeding pleasure to look around on the faces of so many friends he had done business with and realize the strong bonds of friendship which held them together. Growing reminiscent Mr. Gurney confessed that he was born in Hamilton in 1845, and lived there until 1868, having spent many happy years as a member of the fire brigade and learning his early business lessons under the leadership of his father and uncle in the business now known as the Gurney-Tilden Company. "Hamilton is an attractive city and it has attracted my oldest business associate," concluded Mr. Gurney, "yet it seems fitting that the old Gurney-Tilden Company where I started my career, should be managed in its turn by a man who has learned what he knows of the stove and heating business as my right hand man."



W. H. CARRICK.
Who was Honored by the Staff of The Gurney Foundry Co.

Appreciation From Former Associates.

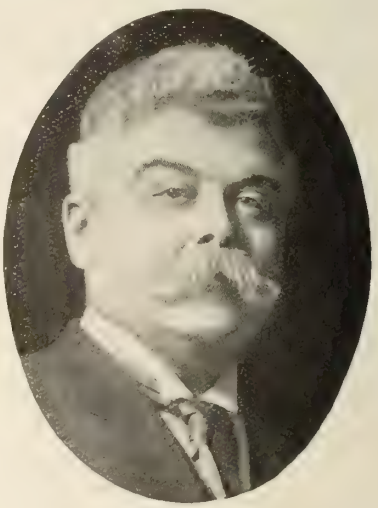
"We could not let Mr. Carrick leave us," continued Mr. Gurney, "without expressing our appreciation of his long and faithful services, and I ask him to accept from his former associates on the Gurney Foundry staff this cabinet of silver."

"I find myself to-night totally unfitted to respond to your very kind and flattering address," said Mr. Carrick, "and am unable to find adequate words that express to you my heartfelt thanks for your beautiful gift. I cannot but feel that the present occasion is the greatest in my life, as it marks my separation from the good old firm many of us have been so long connected with, and the severing of a daily association with a loyal staff who always were willing to co-operate in the work and responsibilities of a great business.

"I cannot tell you how deeply I feel the parting and how much I will miss you all in the future. After a service of 36 years one finds so many ties that it is a wrench at my very heart strings to break away from. I regret that fate deemed it necessary to have a parting of the ways at this late date, however, I feel proud of your esteem and friendship as evidenced by this handsome token of your good will, and I do hope that the cordial and kindly feelings may always continue between us, and although separated from each other, I trust we may all be spared for a useful and happy future.

"I congratulate the firm on the splendid staff of men operating its great business throughout this country, and my standard and aim will be, if possible, to have my new business officered by just such an able and efficiency body of men. Again I thank you all for your many kindnesses to me in the past and if I re-

W. CROMWELL GURNEY,
Who Succeeded Mr. Carrick as General Manager of the Gurney Foundry Company.



"SUNNY TOM" ALCOCK,
Secretary of the Gurney Foundry Company.

ceive from my new associates the same help in the future, I shall be satisfied."

Mr. Carrick's health was enthusiastically toasted and he was given three rousing cheers and as many "tigers."

Responding to the toast of "The Shops," W. Cromwell Gurney, the new general manager of the company, spoke of the loyalty of the members of the staff and added his appreciation of Mr. Carrick's work. W. H. Gibson, who also responded to the toast, spoke of the friendly rivalry existing between the manufacturing and office staffs but said his department could easily make good the shortcomings of the business and advertising staffs.

"The Office and Sales Staffs" were next toasted, the responses being made by "Sunny Tom" Alcock, the silver haired secretary, of the company, and E. Holt Gurney, sales manager. The former was told to "Put on your old grey bonnet" but he replied that though his hair was grey it hadn't been caused by business worries. He told of the affection in which all the members of the office staff had held Mr. Carrick and promised loyal support to the new general manager. E. Holt Gurney, said he had just returned from the Pacific Coast and members of the selling staff in both the east and west had sent messages of regret at being unable to bid farewell to their former manager. Mr. Gurney took advantage of the opportunity to tell some stories of persistency, application and closing ability on the part of the members of the Gurney selling staff. "We have the goods, and we have the men," concluded Mr. Gurney, "and with the exercise of good salesmanship our business will grow greater and bigger than ever."

A pleasing incident at this point was the introduction by Mr. Edward Gurney of John Wright, the company's oldest employe, he having been a member of the mechanical staff of the McGee foundry in 1868, when E. & C. Gurney, father and uncle of the present head of the company removed from Hamilton in 1868 and took over the McGee business. Mr. Wright told of how he had worked in the shop side by side with Mr. Edward Gurney.

In proposing the toast of "The Trade Press," Mr. Gurney spoke of the changes which had been brought about in his time as a result of the development of a better feeling between competitors. Formerly each manufacturer was very reticent about matters concerning his own business but new ideas had taken root and business competitors now came together and discussed costs and other manufacturing problems to the advantage of all. He himself had been able to assist, as an outsider, in the formation of one of the largest stove organizations in the United States. The trade press had been an important factor in creating this better feeling

Weston Wrigley, editor of The Plumber and Steamfitter, and G. H. Honsberger, of the Stove and Heating Journal, responded to the toast.

In bringing the evening to a close Mr Gurney said the business men of Canada had cause to congratulate themselves on the splendid condition of the country. There is work for all in this country and enterprise has a chance to secure its proper reward. "We will not say good-bye to Mr. Carrick, we will but say au revoir."

Opportunities for Plumbing and Heating Work

New Buildings to be Erected—Extensions to Waterworks and Sewerage Plants—Contracts Secured.

General Building.

A. W. McCorkindale will build a residence at London to cost $3,500.

Plans for the new Welland Club house are being prepared. It will cost $10,000.

The new Masonic Temple to be erected at London will not be built until some time next summer.

Seaman and Penniman, have secured the contract to build the new Bank of Commerce branch at Port Arthur.

A new club has been formed at Chatham, Ont., and their intention is to build a large clubhouse near Big Point.

Recent building permits at Sydney, C.B., are James Morley, dwelling, $3,000; R. Gillis, residence for H. A. Froude, $2,000.

Tenders were awarded for the construction of two branches of the Y. M. C. A., at Montreal. These buildings will cost between $60,000 and $70,000 each.

F. H. Hall, store building, for Dr. A. Davis, $2,500; Wm. Sparks, dwelling, $2,500; and Robt. Clohecy, store and apartment building, $8,000, are recent building permits granted at Hamilton.

W. S. Painter, chief architect for the Canadian Pacific Railway, announces that his company has decided to build a new hotel at Vancouver. It will contain from four to five hundred rooms, and will be the finest on the system. The hotel will be fourteen stories in height.

A permit was issued for a branch exchange at Vancouver, to cost $50,000. Other recent building permits there are: J. Ball, $4,200; P. Milloy, $1,400; J. F. Christie, $3,000; C. C. McRae, $1,800; Dickie & Dogmore, apartment house, $126,000; H. R. Walsh, $3,000; A. Blain, $5,000; T. Whiteside, $2,500; A. Muir, $6,000.

Some recent Toronto building permits are as follows: T. H. Cooper, 3 detached dwellings, $30,000; Harry Gramblatt, pair semi-detached dwellings, $4,000; C. B. Hodgson, 3 pair semi-detached dwellings, $12,000; John O'Neill, brick laundry and stable, $46,000; Mabel G. Gee, dwelling, $4,000; Geo. Glendenning, garage and offices, $60,000; A. G. Love, 3 attached dwellings, $6,000; M. Langmuir Mfg. Co., $10,000; Karr & Martin, pair semi-detached dwellings, $6,000; Chas. Lock, pair semi-detached dwellings, $5,000; H. W. Sharp, pair semi-detached dwellings, $6,400; H. Milligan, 2 pair semi-detached dwellings, $12,000; Canada Cycle and Motor Co., factory, $45,000; Robt. D. McLeod, dwelling, $4,000; Thompson & Mitchell, 2 pair semi-detached dwellings, $8,000; Thompson & Mitchell, 2 pairs semi-detached dwellings, $8,000; Johnson & Mackenzie, 2 pairs semi-detached dwellings, $7,000; C. E. Fulford, office building, $13,000; J. J. Walsh, apartments, $15,000; Richard Parton, dwelling, $4,000.

Municipal Undertakings.

The Dominion public building at Chatham, N.B., will be extended.

North Vancouver's sewer appropriation by-law for $40,000 was carried.

The Protestant School Commissioners will build a $4,000 school at Montreal.

The contract for sewer work at Barrie was awarded to D. J. Tuck, Barrie, at $8,475.

City Engineer Macallum, of Hamilton, has announced that he is looking for a site for a new reservoir capable of holding 25,000,000 gallons of water. Cost, $100,000.

The contract for the filtration plant at Prince Albert was given to Wm. Knox at $6,985.

The contract for laying sewer pipe at New Liskeard has been given to H. Proctor at $2,083.

Tenders are invited for pipe laying for making drainage connections into sewers at Nanaimo, B.C.

Donald Sutherland, of Stellarton, N.S., has secured the contract of laying over four miles of sewers.

E. Wondus secured the contract to lay three blocks of the Namayo avenue sewer, at Edmonton, at $14,435.

The First Congregational Church, Ottawa, have purchased a new building site.

Contractor Trick has the contract for the enlargement of the court house at Whitby.

Buildings to the extent of about $13,000 will be erected at Prince Rupert for the Salvation Army.

Melville, Sask. citizens will vote on a by-law to provide $6,000 for a cottage hospital.

Plans are ready for the proposed addition to the Brandon post office building, to cost $30,000.

Plans have been prepared for an addition to the Pierce Avenue Presbyterian Church, Niagara Falls, to cost $10,000.

The architect for the new theatre at Winnipeg, to be built for J. M. Nash, is A. W. Melville. The building will hold about 500 people.

As soon as a suitable site is provided, the Dominion government will immediately erect an armory at Edmonton, to cost not less than $100,000.

The by-laws to install a filtration plant, $12,000; to construct a trunk sewer, $110,000; to construct extensions to sewer and waterworks, $2,600, were all carried by Prince Albert ratepayers.

E. Caroll, Hamilton, was given the contract for sewer construction on Ravenscliffe avenue at 90 cents per foot and 54 cents per foot on Grey street. J. T. Armstrong, has the contract for Glenside avenue at 90 cents, and Flatt avenue at 97 cents.

PLUMBING AND HEATING MARKETS

MONTREAL.

October 14.—Conditions continue to be excellent all the way round, and there is a strong tone to the market. Jobbing houses in many lines find the demand so close to the supply that as soon as the stuff comes in it is reshipped to the users. Thus no great stock is accumulating either by the jobbers or the makers, and it is certain that plumbers and steamfitters are not holding any stock. Thus the whole industry is in a very healthy condition.

The demand continues to be well distributed, and outside points are buying relatively as well as local ones. In fact some of the points served by water freight are buying more heavily apparently than their immediate wants seem to need, and it is evident that some stocking up is commencing to be done.

The markets are unchanged. The radiators and boiler makers are well together and prices are being well maintained. This can be said of the other lines. Prospects look good so far as building is concerned. Locally, permits are still being taken out so it is evident that construction will continue well into the winter.

Soil Pipe.—The pressure has not been lifted off soil pipes. Immediate delivery is wanted at once, and it is evident that all pipe taken is being put forthwith into the ground. The markets are unchanged, and we quote: Light, 60 off, medium and heavy, 70 and 10.

Lead Pipe.—There is more firmness in lead pipe due to the advancing tendency in the crude metal. Orders are good and well distributed. We quote pipe and waste at 30 off, traps and bends, 50; calking lead, 5c per lb.

Solder.—Solder is still firm, under a very good demand. The country demand has looked up, and the aggregate trade is much above the average. We quote: half and half, 22c; wiping, 20½c.

Iron Pipe.—The demand is very active, and has improved the last few weeks. Orders are well assorted, and the boats are taking large consignments. We quote: ¼-in. black, 63; galvanized, 48; ⅜-in. black, 59; galvanized, 44; ½-in. black, 69; galvanized, 59; ¾ to 4-in., black, 71½; galvanized, 61½.

Radiators and Boilers.—The market is very firm, with the makers, if anything more in a line with each other than ever before. Orders are coming in fast, and the plants find it difficult to keep up with the demand. Immediate delivery is taken at once by all users and the market is in a most healthy condition. We quote: Steam boilers, 60 and 5; round hot water boilers, 50 and 10; hot water radiators, 50 and 7½; steam radiators, 50 and 7½ and 2½ per cent.

Scrap.—The market has improved in buying, but there has been no change in prices. We quote: Heavy copper wire, 11½c; light copper bottoms, 10c; heavy yellow brass, 8c; light brass, 6¼c; tea lead, 2½c; heavy lead, 2¾c; scrap zinc, 3c; cast iron, $16.

TORONTO.

Oct. 14.—The plumbing business is now assuming record-breaking proportions. All the local master plumbers report briskness, some saying that on jobbing work they are compelled in some cases to have their men work at night trying to catch up with demands on their time.

Supply houses, too, state that trading is very active just now, practically every line being in request. Prices are firm, but there is an easier tendency to some makes of water heaters.

The fire at Goderich, whereby the Goderich Organ Co.'s factory was burned, caused some concern for a few days. That company makes the wooden casings for most of plumbing supplies for Ontario manufacturers and it looked as if prices would be advanced for a time. However, it is understood that stocks are fairly commensurate, and with the promise of rebuilding there is at present a prospect of steady quotations on a slightly firmer market.

Enamelware.—Country and city business continues brisk. Out-of-town orders are showing a slight falling off, but the loss is more than offset by the increasing demand in the city. Before the end of October local trading in this line should be around record figures. Prices are unchanged and the market is firm. Deliveries to outside points for stocking up are pretty heavy. Closet combinations figure principally in the orders coming in.

Soil Pipe.—Sales continue good, with very slight indications of a falling off in trade. In Toronto there is still a lot of roughing-in going on. The market is firm and prices are unchanged. Light pipe is quoted at 60 and 10; medium and heavy at 70 and 10, and 7 and 8-inch sizes, 50 per cent. Fittings are unchanged at 70 and 10 off.

Lead Pipe.—Demand is still steady and satisfactory, and much better than earlier in the season. Prices remain at 30 per cent. off. Traps and bends are quoted at 50 per cent.; calking lead is unchanged at 4½ per lb., and lead waste is at 9c a lb.

Iron Pipe and Fittings.—The output of pipe, while large, is being taken up readily. Steam-pipe sizes have best call. Quotations remain unchanged, though cast iron fittings discount has been put at 67½ instead of 65 by a couple of houses. Otherwise the market and the situation are unchanged. Discounts on malleable fittings range from 37½ to 40 per cent., with cast iron fittings from 60 to 67½ off. Bushings, cast iron are 70, and malleable are 65 per cent., nipples are 75 and 10; headers, 60, and flanged and malleable-lipped unions, 65 per cent. Galvanized pipe is $6.35, and black pipe, $4.70 per hundred feet, 1-inch size.

Solder—Quotations are steady at the high figures of a fortnight ago, due to the firmness of tin and the strengthening of lead. Various brands of wiping run from 19c to 20c, with half-and-half ranging from 19¾ to 21c. Stocks are large with demand good and steady.

Brass Goods.—The brass trade is active and business is showing steadiness. Prices hold firm at last issue's quotations. Gasaliers and electroliers are opening their season. Inquiry is good, but demand has not yet developed great strength.

Boilers and Radiators.—Business is exceedingly brisk just now. So many orders are crying for shipment that deliveries are delayed. Manufacturers' stocks are greatly depleted, and the works are finding difficulty in turning out goods. The market is decidedly firm, though prices are unchanged. Discounts continue at 50 and 10 for hot water boilers and radiators, with 2½ more quoted off steam radiators. Instalations are very active at present.

Metals.—Tin, 37c; copper, 13½c; lead, $3.80 (imported) $3.75 (domestic.'

Scrap.—Iron, ½c; copper, 10c to 11c; lead, 2½c.

TORONTO MASTER PLUMBERS MEET.

At the regular fortnightly meeting of the Master Plumbers' Section of the Retail Merchants" Association, Toronto, held on Thursday, Sept. 29, there was an attendance of close on fifty.

Two new members were received. G. F. Frankland and A. Passmore were appointed an amusement committee to draft a program of entertainments during the winter, this committee's baseball games during the summer having been so successful. One of the suggestions which found favor was that a series of euchre games to be played fortnightly between teams representing the east and west ends of the city.

A motion of sympathy was tendered Frank R. Maxwell, of Maxwell & Johnson, whose sister (Mrs. Ald. Hilton) died recently, and the secretary was instructed to send a letter of condolence to the family.

Books for Plumbers and Steamfitters

Books on Plumbing

Art of Lead Burning, by C. H. Fay	$2 00
Estimate Books for Plumbers—	
Office Edition, arranged for 100 Estimates	1 50
Office Edition, arranged for 250 Estimates	2 50
Pocket Edition, arranged for 50 Estimates	50
Guide to Testing Plumbing	25
House Drainage and Sanitary Plumbing	50
Johnson's Handy Manual for Plumbers and Steamfitters	1 00
Kitchen Boiler Connections	1 00
Mechanical Drawing for Plumbers, by R. M. Starbuck	1 50
Modern Plumbing Illustrated, by R. M. Starbuck	4 00
Modern Sanitary Plumbing Steam and Hot Water Heating, by J. J. Lawler	4 00
Plumbing Catechism, by C. B. Ball	1 00
Plumbing, by Gray and Ball	1 50
Plumbing and Lead Working	25
Plumbing and House Drainage Problems	2 00
Practical Gas Fitting	1 00
Practical Gas Fitting, by Paul N. Hasluck	75
Practical Hints on Joint Wiping	25
Practical Plumbers' Work, by Paul N. Hasluck	75
Practical Up-to-Date Plumbing, by G. B. Clow	1 50
Practical Wrinkles for the Plumber, by R. M. Starbuck	1 00
Principles and Practice of Plumbing, by J. J. Cosgrove	3 00
Questions and Answers on Plumbing—	
Questions and Answers on the Theory and Practice of Sanitary Plumbing, by R. M. Starbuck	1 00
Plumbing Catechism, or the Theory and Practice of Plumbing Design	1 00
Plumbers' Manual and Text Book	1 00
Repair Kinks for Plumbers, by M. L. Kaiser	50
Sanitary Construction in Building, by Paul N. Hasluck	75
Sanitary Engineering of Buildings, by W. P. Gerhard	5 00
Sanitation in the Modern Home, by J. K. Allen	2 00
Sewers and Drains, by A. Marston	1 00
Standard Practical Plumbing, by P. J. Davies	3 00
Treatment of Septic Sewage	50

Books on Heating

Baldwin on Heating, or Hints to Steamfitters	$2 50
Contract and Estimate Record Book for Steam and Hot Water Heating, by B. H. Jessup	1 50
Dean's System of Greenhouse Heating	2 00
Formulas and Tables for Heating, by J. H. Kinealy	1 00
Furnace Heating, by W. G. Snow	1 75
Heating and Ventilation, by Chas. L. Hubbard	1 50
Heating and Ventilating Buildings, by R. C. Carpenter	4 00
Hot Water Heating, Steam and Gas Fitting, Acetylene Gas; How Generated and How Used, by Lawler and Hanchett	2 00
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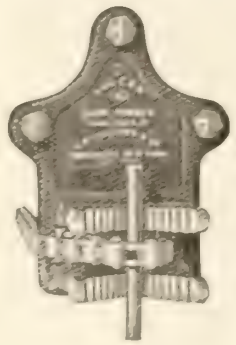

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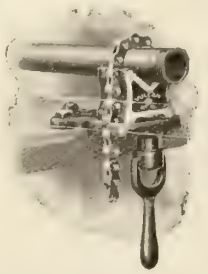

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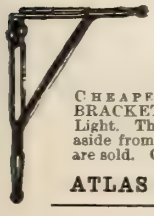

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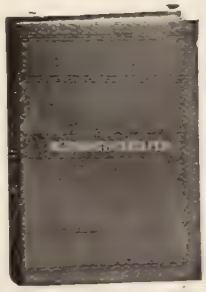

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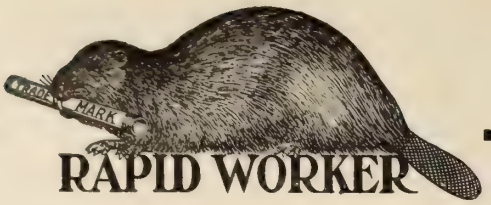

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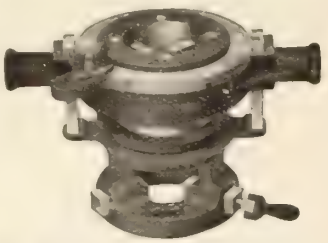

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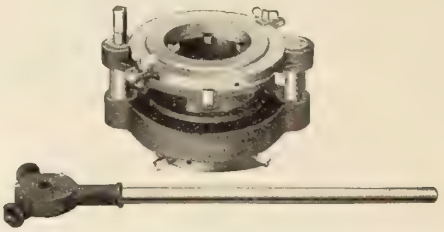

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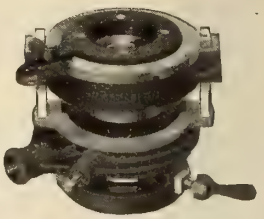

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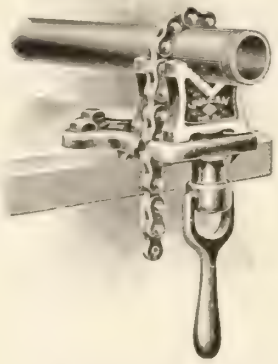

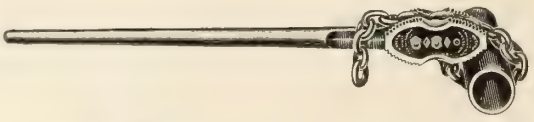

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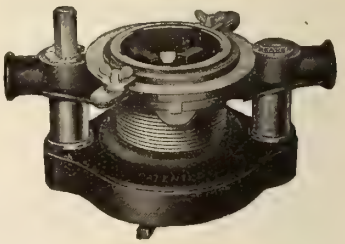

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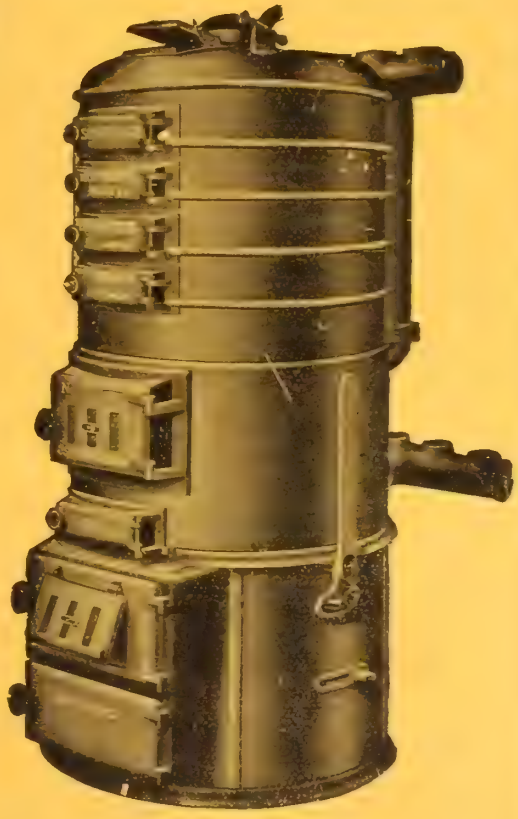

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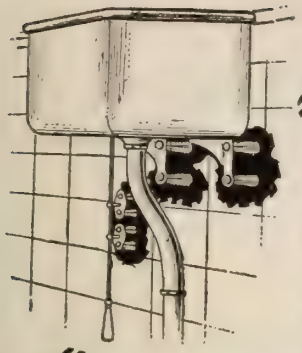

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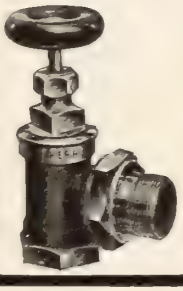

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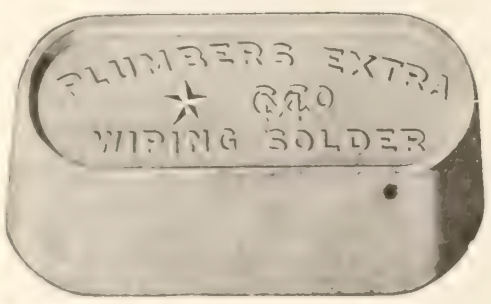

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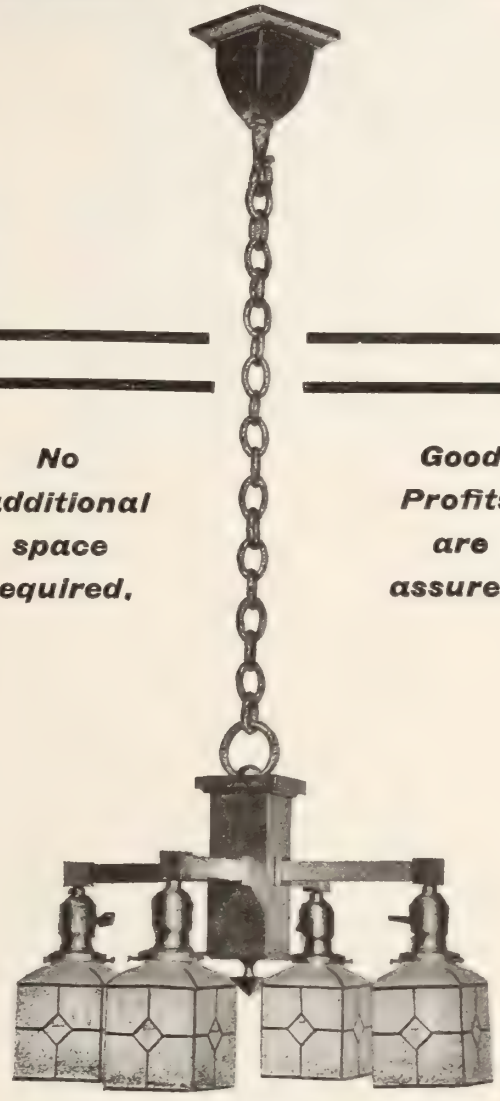

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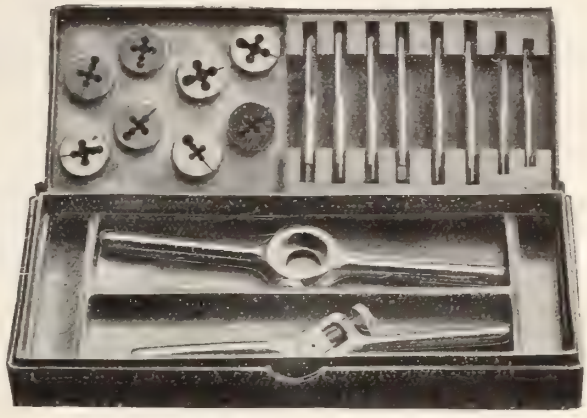

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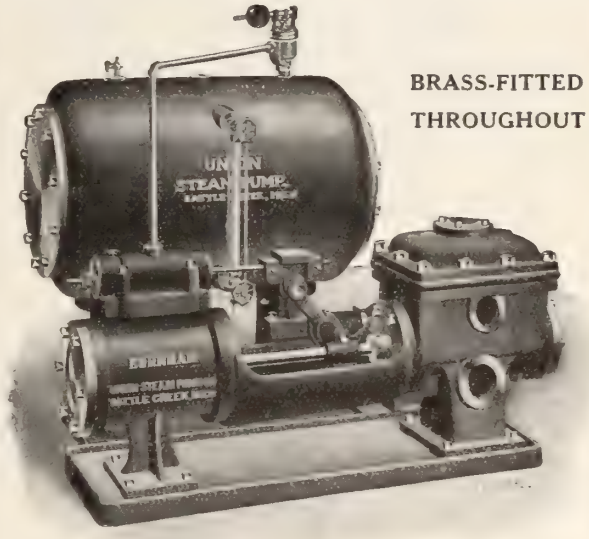

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TORONTO, NOVEMBER 1, 1910

THE BUSINESS SIDE.

By no stretch of the imagination can a large number of plumbers, we might almost say the majority, be considered business men. Turning all their energies to the practical side of their industry, in fact making themselves thorough handicraftsmen; they have paid little attention to the business side of the subject. Maybe during their younger days they thought little about the need of such knowledge, or if they did, that the practical side was the most important one, and that the business side could be easily picked up afterwards.

But it is not so easy. If it were so, many plumbers would not have their books in the hopeless confusion that they have now, nor would so many mistakes be made in the compiling of an account.

Why so many plumbers fight shy of a proper system of accountancy is not because they really have no time, as books must be kept, and it takes less time to keep them properly than to keep them improperly. No, the reason in most cases is because they feel themselves really incapable of evolving a system, and of maintaining it, and consider that it is now too late too start. They have become too routine in their habits to learn bookkeeping, and any regular system of accounts. This, of course, is entirely wrong for no one is too old to learn, and a simple system of bookkeeping is easily picked up, and as we said takes, in the end, much less time to keep going than the go as you please practice of the uninformed plumber. But there is this reluctance on the part of the man who has paid sole attention to the practical side of his work, and therefore we would advise all young men to avoid such future troubles. Just a little time taken off the pleasure of an odd winter's evening here and there, a few class lectures or personal instruction from a friendly clerk in a large business house, a course or two from a correspondence school, and the young plumber can avoid many troubles in after life.

How many failures are due to faulty book-keeping and estimating? How many plumbers forget all about overhead expenses in estimating on a job? Probably part of the material used is overlooked, and a rough figure only as to what the profit percentage should be is added, and the job is put through. But the forgetting of overhead expenses, the forgetting of the fact that materials have gone up in price since the stuff was bought and therefore should be listed higher as it will cost more to place them now, turns a profit into a loss. A young clerk to help in the shop, and with the letters, may be a recent innovation. Have the extra wages been added to the profit percentage? It is points like this that turn a profitable job into just the reverse, and a business that should be successful into a failure.

Then there is the correct keeping of the books and a systematical way of getting out the accounts, and of keeping after delinquents. Unless the business side of a shop is carefully watched there are hundreds of ways by which leakages can occur and serious ones too. Many a man fancying that he has been making a good profit, finds out to his great astonishment that the conditions are just the reverse. If he had been a practical bookkeeper this could never have happened.

Thus we strongly advise all young men with a proper ambition to become a master plumber and a successful one too, to make themselves proficient in a simple system of bookkeeping and familiar with figures so that when they have their own business, the prospect of keeping a ledger, cash book, etc., will not appall them, neither will they fall into the silly habit of forgetting important charges on the business that must be borne proportionately by every job that goes out.

PUSH THE SALE OF GAS GOODS.

The Metal Worker points out that a substantial saving can be effected for many of the customers of the plumber and gas fitter if the plumber will bring to their attention the newer appliances for this purpose. In many instances when the winter season comes on and a larger consumption of gas is required, a greater pressure is put on the street mains, and this is apt to make old and dirty gas burners blow so that much more gas is driven through the burners than is consumed, and, again, the gas that does come through is broken up into currents which give an irregular flame of poor illumination.

Here is a chance for the plumber to show customers how a pressure regulator or gas governor will maintain an even flow and avoid blowing. These devices keep the pressure down to the point at which different gas appliances used work to the best advantage and prevent a waste of gas. A substantial saving can be effected in the gas bill in this way. Then again it gives an opportunity to call attention to the fact that burners can be renewed with decided advantage to the illumination of the home. It will also present the opportunity for selling some of the new incandescent gas fixtures, which give infinitely more illumination with a less amount of gas burned.

These opportunities are open to the plumber and gas fitter in centres where there is a supply of gas distributed throughout the city. The opportunity, however, is by no

means confined to this class of trade. Now, when it is desirable to make all parts of the home as light in the long winter evenings as they were during the summer evenings, it is his opportunity to call attention to the gasoline gas generators and to the acetylene lighting apparatus. This kind of apparatus is salable wherever there is a sufficient amount of money available to defray the expense. The advantages need only to be explained, the ease of making the installation shown and the simplicity of managing the generator made clear to insure orders being secured. The plumber who has not provided himself with the literature and is not prepared to exploit this line of trade is neglecting an opportunity to make money.

Maxwell & Johnson, Toronto, more than pay the expenses of an expert bookkeeper and office man who handles the details of their business, out of the profits from the sale of gas goods in their shop.

OFFICIAL NEWS

N. A. M. P. & S. F. of CANADA

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Chairmen of Committees:—Legislative, H. A. Knox, Ottawa; Sanitary, Geo. Ross, Brockville; Apprenticeship, Jas. Griffin, Montreal; Essay, J. E. Farrell, North Bay.

Next National Convention will be held at Port Arthur and For William about June 1, 1911.

OVERLOOKING REAL ADVANTAGE OF ASSOCIATIONS.

A co-operative movement is commendable when it is for the common good of the whole trade affected. Too often, after an organization is effected, altruism is ignored and selfishness predominates.

There are more important things than trade protection and the labor question for plumbers' associations to deal with, points out The Metal Worker, and when proper attention is given to them, the two mentioned will dwindle out of the way of progress and without causing trouble.

The campaign of education eliminates demoralization of every character, and, as has often pointed out in these columns, is farreaching in its beneficial influence. Trade protection is so general that violations cause indignation, and, again, petty matters are taken up as violations, only to cause irritation and friction. Then why allow it to occupy the centre of the stage continually?

To conduct a successful business requires concentrated attention to selling more than to buying, to making a profit rather than meeting a price; to satisfying a customer rather than securing his business; to knowing the true cost of doing the work rather than knowing the competitor's price; and when these talents are fully developed by receiving the attention they should, makers will seek the trade of such men rather than sales to the public, and trade protection takes care of itself.

Whether a shop is open or union is of little importance to the man who manages his business so that both his customers and workmen are satisfied, and there are plenty of shops where the labor question never comes up.

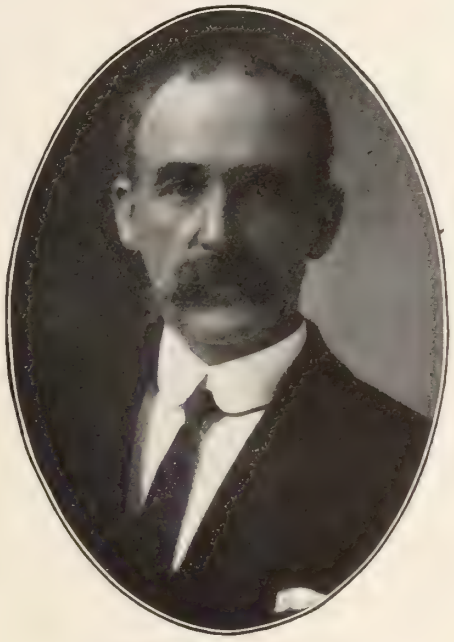
Some effort expended by associations on other than labor and protection would prove of greatest benefit to the membership, even though such a movement in the beginning would not be along the lines of least resistance.

PLUMBERS' ASSOCIATION ENGAGES ATTORNEY.

The Chicago Master Plumbers' Association has engaged an attorney to succeed another who had resigned after acting in that capacity for a number of years.

Under the new arrangement the association secures for its members in good standing upon the payment of a nominal fee by them consultation and advice in matters pertaining to members' business, the preparation and examination of contracts, bills of sale, leases, mortgages, deeds, etc. The attorney also contemplates later to establish a collection agency for the collection of unpaid bills on a very reasonable basis to members of the association.

In Toronto members of the Master Plumbers' section of the Retail Merchants' Association pay a $5 fee for a similar collection service, but they have no arrangement to secure legal advice. The Chicago idea appears to be a good one.



JAMES MARR, Calgary,
One of the Most Progressive Delegates at the Recent National Convention at Toronto.

CANADIAN ASSOCIATION NEWS NOTES.

Lewis Legrow, national secretary, Toronto, has recovered from his recent illness but has been taking a week's holidays to regain his strength.

The convention of Ontario master plumbers called to meet in Toronto on Thanksgiving day, Oct. 31, will be more of the nature of a committee meeting than a convention, as it was found impossible to make satisfactory arrangements for the convention. The circulars promised by the Retail Merchants' Association were not ready until Friday, Oct. 28. Another convention will probably be called for Good Friday next.

Twenty-four schoolhouses in Indiana have been condemned by the State Board of Health because of insanitary conditions.

The Plumbing Business

As long as the plumber clings to his traps, tubs, pipes and wrenches with a mind rising no higher than the mechanical details of his trade, he will be merely a "plumber." This series of articles will deal more particularly with the business end and readers should derive benefit from reading them.

Written for the Plumber and Steamfitter by Charles H. Denison.

CHAPTER VII.

Suppose that a man bought a lot having a fine location on one of the best residence streets of any good town or city that you care to think of, and should build upon it one of the old "log cabins" of the days of his grandfather, or perhaps the "upright and wing" of not so many years ago?

Wouldn't that man be regarded as a crank and remonstrated with by his friends? Indeed, in some cities he would only be allowed to buy the lot upon the condition that he build his residence according to certain plans.

People do not seem to have to be forced to build better, they are building better and better each year. Among the things that have brought this about are increased prosperity, but stronger still is the matter of education along the lines of better and more comfortable homes, which shall be beautiful at the same time.

The education and progressive ideas, however, seem to have a certain limit. When it comes to the sanitary arrangements and the heating of the house, the proposition assumes a most different aspect. Witness the number of fine houses that go up each year, "heated by stoves," or that "thimble rigger," the hot air furnace; with a limit regarding the sanitary line of fixtures amounting to a cheap kitchen sink, while a galvanized iron wash tub takes the place of a porcelain bath tub.

There is something evidently very unfortunate about such a state of affairs exists, for a man who can afford to build a house along modern lines, to-day, can generally spend enough money to complete the deal as regards the rest of the residence and its comforts.

That this is not being universally done is a self-evident fact. That many who install both plumbing and heating do not put in as good material as they should is a truth that needs but little demonstrating. The reason for these matters being so falls upon the unlucky shoulders of our friend, the master plumber, who has only himself to blame. The real estate man, the furniture man, the painter, the butcher, the grocery man, and most any other SALESMAN seems to be able to place the goods, excepting our aforementioned friend, the master plumber, who appears to be all by his lonesome.

The Plumber's Weakest Point.

Now this matter of education has been, and still is, carried on by different means; but before one begins any such proceedings, they must know what they are going to talk about and along what lines. That is the weakest point in the make-up of our friend, who, half the time, absolutely does not know what he wants to say. He is on to the fact that something must be said, but just how to go about it and what not to say almost stumps him. Take the matter of health, for instance. Some people think that if they take a bath once a week that they have fulfilled all the requirements of every law. I read a story: "A young lady from the country went to visit some relation in the city. Writing home she said, they have such a fine bath room that I can hardly wait until Saturday night to take my bath." That idea represents the sentiment of more folks in the land than you have any idea of. Observe the amount of education that is needed to show the people of the poorer classes what should be done along such lines. Think of the bathhouses and public comfort stations that are needed; notice the hundreds of substantial homes that are not fitted up with "modern conveniences," and then tell me whether or not there is any need for the master plumber to fit himself to talk and to be able to make a conversation better than that of M. Anthony over what remained of one J. Caesar, Esq.

I have not mentioned the gas, the electric lights, the vacuum clearing apparatus, and but faintly alluded to the heating of the house. Begin to see the amount of education that the master should be in possession of, do you? Does the idea slowly commence to trickle through your brain that a man has got to know something besides "pipes and valves" to succeed in this business?

Assuming that our friend, the master plumber, has gone to work and fitted himself educationally, he should not hesitate to express himself, both orally and through the medium of printer's ink. The average man's horizon is limited to the locality in which he lives or does business. Consequently, unless he be of a more than usually observing and studious disposition, he does not see very far from the end of his nose. Neither does he generally take the trouble and pains to educate himself along broader lines.

What, then, could he expect to do for his customers or the general public? It certainly is a case, in our business, of where the masters have got to get posted as to the best that there is in the lines of all goods, the manner of correct instalation, of selling and of knowing how to work up new business.

It may be argued that we are supplying all the present demand; in fact, that we are more than supplying this demand. To this I would reply: "Make more demand."

Create a Demand.

How is the master plumber going to do this if he is not "up to snuff," or is "half shot" part of the time? The answer is that the party so afflicted will fail miserably, and that the hint thrown out is mainly true of a larger percentage of our craft than I should like to state in actual figures.

I consider that it is a blot upon our business when a ten-dollar-a-week clerk in a dry goods store can make a more pleasing impression, speaking generally, than can at least 75 per cent. of the masters in the business. The clerk is there to sell goods, and do it he must or lose his position. Does the master use tact, discretion, patience and produce the impression upon the customer that he knows his goods thoroughly? Perhaps one in 25 can do this, and then again, possibly they cannot. In some parts of the country the masters are just waking up to the fact that the "women folks" are the very best class of customers they can acquire. How many masters have we who can make other than the most primary attempts to educate these women along sanitary lines, or, perchance, sell them outfits?

What impression does the average master or the average journeyman plumber leave upon the customer? Ask yourself the question and then try and frame an answer. I think very likely that it

might run somewhat as follows: the idea left on my mind was a composite conglomeration of a laborer, a poorly trained clerk or salesman with a large per cent. of boor thrown in for the background, appearing and acting as if he were in a strange country, the roads of which he did not know, and having no sense of the boundaries of the same country, he wanders around in the most helpless fashion, ever at a loss to properly locate himself.

I do not believe, however, granting this impression is not overdrawn, that it will continue so very much longer, for the spirit of the times has reached to all departments of business and life, and is awakening us with a desire for better knowledge.

The 20th century spells Progress, and the circumstances seem to combine to make us live up to it.

Newspaper Publicity for Master Plumbers

Samples of Ads. Inserted in Local Papers by Canadian Master Plumbers—Most Advertisers Talk Quality and Some Give Lists of Satisfied Customers.

By Weston Wrigley.

Plumbers as a rule are poor advertisers, but there is a noticeable tendency towards improvement and The Plumber and Steamfitter will assist in this direction by reproducing, from time to time, samples of the ads. inserted in local papers by Canadian plumbers and fitters, about a score being illustrated in the accompanying engraving. A doctor, a lawyer or an architect may be able to get along without advertising or by merely placing his card in a trade directory. But a plumber is different as he has goods as well as technical knowledge to sell and there is constant imurovement in his line as well as dense ignorance on the part of many as to the need for sanitary equipment. The plumber or fitter may exist by doing a jobbing business and by figuring on contract work on a competitive basis, but if he is to do much more than exist, he must go after business in a progressive manner by advertising judiciously, talking quality and building up a reputation to back up his talk.

Probably the strongest ads. amongst those reproduced are those of M. M. O'Connell, Ottawa, and W. Wylie Rockville, Kentville, N.S., both of whom

The Wm. Head Co., Ltd.
of
Calgary and Lethbridge
Material and Workmanship are mighty factors in the installation of Steam and Hot Water Systems and general Plumbing Work.
Our reputation for first-class material and workmanship is your guarantee of our efficiency and responsibility.
We have for your service a Full Line of High Grade Plumbing and Heating Goods
We are prepared to instal any system of Plumbing, Steam or Hot-Water Heating, anywhere in city or country
When you are in Calgary or Lethbridge, call at our Office. We will be pleased to show you our very fine Bath Rooms, already fitted up
If we instal a Pneumatic Water Supply System for you, you can always be sure of a supply of water for domestic purposes and in the event of fire.
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JOHNSTON BLOCK MAIN STREET
PLUMBING
The Waterworks and Sewerage system will soon be in operation. Are you making any preparations to be able to use them? I have a large stock of reliable goods on hand and am prepared to quote you prices for installing a satisfactory plumbing system. Have engaged an expert plumber and can guarantee every job done. Now is the time to get my prices. Do not delay till the rush is on and then have to wait nearly all summer to get the work done. Act now and get the work under way and be among the first to take advantage of the modern conveniences.
Yours for Business
GEO. D. WALLACE
Let This Fact Impress Itself Upon You
REFERENCES PLUMBING and HEATING
REFERENCES PLUMBING
W. Wylie Rockwell
Plumbing and Sheet Metal Works
P. O. Box 104 KENTVILLE
LIGHTNING COULDN'T BE QUICKER
So Send Us Your Plumbing Orders
Burns Bros. & Grassie
VALUE! QUALITY!
T. J. MINNES & CO. QUALITY PLUMBERS
Bell Phone 301 64 Colborne St. Automatic Phone 331
Why Not Have Your
Plumbing Heating and Tinsmithing
Skilled Mechanics
WORK HIGH GRADE
C. A. McKANE
Hot Air Furnaces, $40 and up
Kitchen Sinks 1.60
Bath Tubs 13
Two-Piece Laundry Tub $40 up
C. A. McKane
Broadway Street
HAILEYBURY Ont.
UP-TO-DATE PLUMBING
PLUMBING
F. C. HUNT Plumbing Co.
How About Your Furnace?
Is it working satisfactorily? If not see us. We employ only experts in that line. If you are in need of a new one see the PEASE "ECONOMY"
We are sole agents
The Hodgson Plumbing and Heating Co. Ltd.
PHONE 2413 643 SEYMOUR STREET
M. M. O'CONNELL
172 BANKS ST., OTTAWA
PLUMBING, HEATING and VENTILATING ENGINEER
SOME OF OUR RECENT CONTRACTS
M. M. O'CONNELL
172 Banks St., Ottawa Phone 2479
Price Cut from $7.00 To $3.00 Electric Grate Toasters
The F. R. J. M'Pherson Company
341 George St.
Plumbing Counsel
DO YOU NEED A BATH?
$16.35 to $60
FRED. ARMSTRONG CO.
PLUMBING & HEATING
E. K. STRACHAN
PLUMBER
E. STATHAM & SON
Plumbing, Pipe Fitting and General Repairing.
WHEN REMODELLING YOUR HOME DO NOT OVERLOOK AN ATTRACTIVE BATHROOM
OUR INSPECTION OF OUR SPECIALLY SELECTED FIXTURES IS SOLICITED
THE BENNETT & WRIGHT CO. LIMITED
Spring Plumbing
P. CAMPBELL & CO.
PLUMBING HEATING LIGHTING
Telephone 327 71 Peters William St.
BARRETT HARDWARE COMPANY
PLUMBING
CLINE & LIGHT
VERY DAINTY
JOHN J. McNEELEY
Plumbing and Heating
A MODEL BATHROOM
JOHN CONLEY
OFFERING A SUGGESTION
WE SUGGEST WE DO YOUR PLUMBING
PLUMBING SUPPLIES FURNISHED BY US
The Colbert
Plumbing and Heating Co'y Ltd

Samples of Advertisements of Plumbing and Heating Firms Clipped from Canadian Papers.

print a list of satisfied customers. That kind of advertising carries weight with the class of people whose business you want.

The Wm. Head Co., Calgary and Lethbridge, make a splendid talk on good material and workmanship. They are catering for country as well as city trade, the ad. appearing in a paper circulating amongst storekeepers in small Alberta towns. It would, therefore, talk quality, guarantee satisfaction and have been more convincing if it could have said that "John Jones, general merchant, of X.Y.Z., having no desire to run the risk of becoming a typhoid patient, had installed a pneumatic water supply system for his house and store, and had installed a modern bathroom and hot water heating system," following this up with a list of similar jobs installed.

The ads. of A. Sherat, Victoria, F. C. Hunt, London, Hodgson Plumbing & Heating Co., Vancouver, and P. Campbell & Co., are all typical examples of ads. inserted by progressive firms which are not content with inserting a mere card in their local paper. In none of these ads., however, are there any particularly appealing arguments. Bennett & Wright's ad. is in the same class, but as it appeared in a society paper, an attractively arranged ad. was probably as effective as an argumentative announcement.

F. G. Johnston, Portage la Prairie, has a good line of talk although it lacks a good phrase to begin with. "Plumbing as necessary as sidewalks" would have attracted attention and emphasized the point made in the ad. Burns Bros. & Grassie talk quick service, but the type is badly battered and too much space is given to the one point made.

T. J. Minnes & Co., Brantford, talk quality and condemn substitutes, but they talk too much for the space occupied. Many people would hesitate to read the ad. because of its length—more would have read it if there had been more white space around the "talk." And the matter should be changed every week and not allowed to stand until the type gets mixed up so badly that in some places it resembles a Chinese puzzle.

George D. Wallace, Wetaskiwin, Alta., is enterprising in urging the placing of orders for plumbing before the waterworks system is installed, but he makes a similar mistake to that made by Minnes & Co., by failing to leave enough white space around his talk. He makes some good points, but his printer has not done his part in a satisfactory manner. The type is mixed up badly and there is absolutely no attempt at display.

C. A. McKane & Co., Haileybury, are liberal advertisers, but they differ from most plumbers in quoting prices on certain classes of work. The time will probably come when more will do this but the policy of the most successful firms to-day is to talk quality rather than price.

The F. R. J. McPherson Co., Peterboro, and the Fred Armstrong Co., Toronto, both have convincing single column ads. in which prices are quoted, the former on electric toasters and the latter giving a range of prices on baths. The ads. are attractively arranged and should be effective in selling goods.

E. K. Strachan, Nelson, B.C., and E. Statham & Son, Strathroy, Ont., merely insert cards, making no attempt to invite attention to the quality of the work they do. This might very well be likened to putting up a sign and neglecting to put in a window display. The Barrett Hardware Co., use about the same amount of space, but they say something which is likely to interest customers and induce them to give the firm a chance to help in deciding what fixtures are needed on any job under consideration.

A style of advertising popular with master plumbers is illustrated in the single column ads. of Cline & Light, John J. McNeeley, John Conley and the Colbert Plumbing & Heating Co., all have stock illustrations secured from manufacturers or supply houses, under which are arguments intended to interest customers in modern plumbing fixtures. Inspection is invited, but this invitation is of little value unless the advertisers make an attractive display of fixtures in their shops.

Readers of The Plumber and Steamfitter are invited to send samples of their ads for criticism, while photos of displays in windows or shop interiors are also solicited.

GASOLENE STORAGE TANKS.

Owing to considerations of safety, economy, convenience, underwriters' rules and various other reasons, nine-tenths of automobile owners are installing storage tanks for gasoline. These tanks always are placed some distance from the point of outlet, the gasoline being piped to the garage. The efficiency of gasoline depends entirely on the quantity of gas retained by the fluid and since it vaporizes rapidly on the slightest exposure to the atmosphere, the tank and all pipes and connections must be absolutely air-tight, which fact necessitates good workmanship in installing the outfit.

Of course all of the usual pipe fitting is done by a plumber but—and herein lies the above-mentioned "tip"—what's the matter with the plumber acting as salesman for the whole outfit, tank and all? He sells hot water and other types of tanks—why not air-tight gasoline tanks?

There is a good profit in them and a sale of this sort often leads up to a patronage which is most desirable, since the average automobile owner is fairly well supplied with this world's goods. The sample tanks do not take up any more space in a showroom than the ordinary closet fixture and they require very little demonstration. The convenience of ordering a tank and connections complete from one dealer is a potent argument and one that need not be dwelt upon here.

The only question for the plumber to decide, is the sort of tank to handle. There are various kinds in the market, but it is not the purpose of this article to boost any of them. It is suggested, though, that the tank selected be one so constructed that leakage is impossible—the seamless kind answers this requirement. Riveted tanks may or may not fill the bill—experiments along this line may prove costly. The pump is a secondary consideration as any good pump will do the work if the tank and piping are the right sort, although good practice suggests the use of the simply constructed air-pressure pump. Valves in suction pumps sometimes deteriorate through contact with the gasoline.

The proposition looks good and it is to be hoped that the plumber who has an eye open for new business will corral, rope, tie and brand this opportunity as his own.—Plumbers Trade Journal.

SMALL SOIL PIPE IN ENGLAND.

The question of 3-in soil pipes for water closets, comments the Plumber and Decorator, London, England, has been claiming the attention of the American Society of Inspectors of Plumbing and Sanitary Engineers, and the arguments for and against are familiar, it says, in England. Its reference to the subject is as follows: That a 3-in. pipe is of sufficient size to take the discharge from quite a number of closets is indisputable. It will, too, be kept in a cleanlier state than one of larger diameter; but the danger of siphonic action is greatly increased, and this fact alone is sufficient to render its use impossible. Many by-laws now allow of a 3½-in. pipe, and this is the smallest diameter that can be permitted with safety. As regards the question of liability to stoppage, there is no need to take this into account. A soil pipe is for the reception of soil and waste water, and scrubbing brushes, house flannels and suchlike household impedimenta need not seriously be reckoned with. They are, after all, as likely to choke a 3½-in. as a 3-in. pipe, and no system of drainage can be rendered absolutely fool-proof.

Plumbing Regulations of the State of Ohio

Copy of an Act Enacted by the State Legislature to Create the Office of State Inspector of Plumbing, Defining his Duties and Compensation, and Fixing Penalties for Violations.

Be it enacted by the General Assembly of the State of Ohio:

Section 1. There shall be, and is hereby, established and created in this state the office of state inspector of plumbing, under the direction and supervision of state board of health.

Section 2. It shall be the duty of the state board of health, within ninety days after the passage and approval of this act, to appoint an elector of this state to fill the office of state inspector of plumbing, and to hold office until such a time as his successor may be appointed and qualified. The person so appointed must be a plumber with at least ten years' experience. The state Board of Health shall have the power to make and enforce rules and regulations governing plumbing to carry out the provisions of this act.

Section 3. It shall be the duty of said inspector of plumbing, as often as instructed by the state Board of Health, to inspect any and all public or private institutions, sanitariums, hospitals, prisons, schools, factories, workshops, or places where men, women or children are or might be employed, and to condemn any and all unsanitary or defective plumbing that may be found in connection therewith, and to order such changes in the method of construction of the drainage and ventilation, as well as the arrangement of the plumbing appliances, as may be necessary to insure the safety of the public health.

Such inspector shall not exercise any authority in municipalities or other political sub-divisions wherein ordinances or resolutions have been adopted by the proper authorities regulating plumbing or prescribing the character thereof.

Section 4. He shalll hold himself in readiness at any and all times to go to any part of the state if so directed by the state Board of Health, for the purpose of making a sanitary inspection of any building or other place that they have reason to believe is in such a condition as to be a menace to the public health.

Section 5. When any building is found to be in a sanitary condition or when changes which are ordered in the plumbing, drainage or ventilation have been made, and after a thorough inspection on approval by said inspector of plumbing, he shall issue a certificate signed by himself and countersigned by the state Board of Health, which must be posted in a conspicuous place for the benefit of the public at large. Upon notification by said inspector, said certificate shall be revoked for any violation of this act.

Section 6. For each inspection and certificate so issued, except on inspections of state buildings or structures, he shall charge a fee of five dollars, such fee to be turned into the state treasury. If upon first inspection such work is found in sanitary condition, no charge is to be made for such inspection or certificate.

Section 7. Within ten days after his appointment the said inspector shall give a bond, payable to the State of Ohio, for the faithful performance of his duties in the sum of five thousand dollars. Said bond, when approved by the Attorney-General, shall be deposited with the auditor of state.

Section 8. The inspector so appointed shall not, during his term of office, be engaged or interested in the plumbing business or the sale of any plumbing supplies, nor shall he act as agent directly or indirectly, for any person or persons so engaged.

Section 9. He shall receive for his services a salary of eighteen hundred dollars per annum, payable monthly, and all necessary expenses.

Section 10. He shall have the power between sunrise and sunset to enter any public building where he has good and sufficient reason to believe that the sanitary condition of such premises is such as to endanger the public health, for the purpose of making such inspection as may be necessary to ascertain the condition of the same.

Section 11. He shall report promptly to the state Board of Health the condition of all premises inspected by him; also the number of inspections and changes ordered, as well as any other information with his office, that they may require.

Section 12. He shall be provided with a suitable office in the City of Columbus, as well as with all necessary apparatus for making tests, and such stationery as the business of his office may require.

Section 13. It shall be the duty of any owner, agent or manager, of any public building where an inspection is ordered by said inspector of plumbing to cause or have the entire system of drainage and ventilation repaired, as he may direct. After due notice to repair such work, it shall be the duty of said owner, agent or manager to notify said inspector of plumbing that such work is ready for his inspection. Failing to have work ready for inspection at specified time of such notice, he will be subject to such penalty as hereinafter provided.

Section 14. Any person or persons, owner, agent or manager refusing, failing or neglecting to comply with any of the provisions of this act, shall be deemed guilty of a misdemeanor, and upon conviction shall be subject to a fine of not less than ten nor more than one hundred dollars, or imprisoned for not less than ten nor more than ninety days or both; but no person shall be imprisoned under this section for the first offence, and the prosecution shall always be as and for a first offence, unless the affidavit upon which the prosecution is instituted contains the allegation that the offence is a second or repeated offence.

Section 15. It shall be the duty of said inspector of plumbing upon receipt of the knowledge that any part of this act has been violated to go before any justice of the peace and cause the arrest and prosecution of all persons of whom he has reason to believe are guilty of such violation.

Section 16. All acts and parts of acts in conflict herewith are hereby repealed.

The following list of articles will give an idea of an assortment of gas light goods which will be found very complete and can advantageously be bought by a plumber who contemplates putting in a stock:

Common burners and tips; mantles, to retail for 10, 15, 20, 25, 30 and 35 cents; globes for upright lights—clear, frosted and opal; globes for inverted lights—yellow, green, ruby, clear, frosted and opal; chandelier and bracket globes, hall lights, upright lights, junior lights, inverted lights, pilot lights, mica canopies and chimneys. An assortment of portables, somewhat better than those carried during the balance of the year, make a valuable addition to goods for the Christmas period.

A good plan for keeping mantles is to put them in the regular shelving with thin wood movable partitions separating the various kinds. A small strip of cardboard, with name and price, can be tacked above each kind, thus avoiding confusion. Manufacturers generally make good all mantles broken in transit.

The line is clean, requires but a comparatively small amount of shelf space and is salable the year round, the demand, of course, being largest during the fall and winter months. On mantles, globes and shades the sale is steady, particularly on mantles, and if an assortment is carried covering all requirements they take on considerable importance.

"The Saving of Heat Units" is a Clue to Larger Profits

H. L. Peiler Tells How a Leak of $2,600 Was Turned Into a Profit—How Manufacturers Can Turn Waste Into Profits by Taking Care of Condensation.

MODERN engineering presents to its students many fascinating features. Civil engineering has achieved many triumphs of construction, and in its discoveries of the practical application of theory to the utilization of the special qualities of steel and concrete, has overcome so many difficulties, has raised so many and such various monuments to its own skill, that the average man is lost in admiration while contemplating the results.

Electrical engineering, while relatively an infant branch, has made such rapid and brilliant strides that we already regard as ordinary commonplaces achievements that less than one generation ago aroused the wonder of the world. It is really difficult to realize how very youthful are such every-day utilities as the incandescent lamp and the telephone. Long distance transmission of currents of relatively high potentials only dates from yesterday.

In mechanical engineering, while progress has been steady, it has not been so rapid, and the advances have come in short rushes with a rest between. In recent years, we have progressed from the single cylinder engine to the compound, from the low-pressure slow-speed engine to the high-piston speed, long-stroke and quick revolution engine necessitating high pressures. Then comes the development of the turbine principle and as a crown to all of these, the successful application of the superheating of the steam. Keeping up with the development of the engine, the steam-generating plant has also progressed, and boilers with their accessories from grates, mechanical stokers, automatic feed-control and other fuel-saving attachments, make the modern boiler-room a very different proposition from that of even fifteen years ago. In another direction, we have the internal combustion engine in its various forms and many other devices for cheapening the cost of power-production and simplifying the complex problems that confront the present day manufacturer when he is contemplating his costs.

In view of all these bright and outstanding achievements in the mechanical world, it seems as if it might be a very difficult task that I have undertaken when I presume to address you on such a commonplace topic as that which has been chosen for me.

I am in the position of the gleaner of the scriptures. Before me have gone the reapers and the binders, they occupy the whole skyline because their work is more prominent. But in their haste to show large and brilliant results, they have neglected the apparently small waste that lies scattered here and there in the furrows, so small perhaps that it has to be searched for, and yet, in the aggregate, so large that its accumulation hour after hour, day after day, and month after month, presents at the end of a whole year a sum total that is surprising.

Waste of Hot Water.

On going over a certain plant with the owner, I asked him where a particular return line led that originated in a dry-room. He replied that it emptied into the drain. I asked how much water he was losing, and he stated that it could not be much and that the water was cheap. However, I managed to arouse his curiosity sufficiently to have the pipe uncovered and the water

H. L. PEILER.

measured. To his surprise he found that a 50 gallon barrel was filled every 10 minutes and that the temperature of the water near the outlet of this large drier and while still under pressure, was 306 F. His engineer calculated for him the approximate cost, in tons of coal, of heating nearly 250,000 gallons of water from 50 F. to 300 F., and this manufacturer came to the conclusion that he was not sufficiently wealthy to continue that system, when at relatively low cost, the same water could be returned to the boilers direct and without loss of heat-units. This plant had almost every practical device for making steam cheaply. High-class boilers, modern engines, approved equipment everywhere, including ball-bearing shafting and everything to reduce friction loss to a minimum, and yet this was only one of a series of "leaks" that were discovered during a careful investigation, and eventually he found that leaks, which cost him $1,800 to stop, had for years previously been trickling $2,600 annually into the drains. Everybody possible had apparently been done to make the whole plant modern and up-to-date, which is equivalent to saying "economical to operate," but the men in charge had neglected to "look into the furrows." This is only one of a series of similar incidents which I can recall in my own experience.

I am a hunter of leaks, and this saving of the heat-units in the water of condensation, while being on a superficial view only a very minor matter, is one of those smaller details of the engineering field that seems to be fated to be left to some hanger-on of the profession like myself, and it keeps me very busy gleaning what I find in the furrows. If I were permitted an attempt at a joke, even on such an apparently mirthless topic as condensation, I could say that it keeps me constantly "in hot water."

Present Day Conditions.

For purpose of comparison, it is necessary for me to state briefly the conditions that are most frequently met with in steam-using plants in this country. They are of course quite familiar to all engineers. The steam is trapped at the point of discharge at the apparatus in which it is used. The water is then usually run by gravity to some low point, gathered in an open heater, vented receiver or hot well, and after the make-up-water has been added, the boiler is fed from this central reservoir. Where the steam is used under very low pressure (0—5 lbs.) and where exhaust steam from the engines is mixed with this low-pressure live steam, the temperature of this water of condensation upon reaching the receiver is frequently under the boiling point and the addition of the cold make-up water further reduces it to a point where it can readily be handled by a good hot-water pump. Under these conditions, it is not uneconomical to handle the returns in this manner. But here I would like to point out that in drawing hot water from an open heater or receiver, and passing it through a pump, the temperature is still further reduced, and

many engineers who have thermometers on the heater or receiver, overlook the important fact that in most cases they lose from 8 to 12 degrees between the heater and the point where the feed-water enters the boilers, and that this means a direct loss of from 2-3 to over 1 p.c. of the total fuel consumption.

However, there are very few plants that answer to this description. In nearly evety industrial process in which steam is used for heating, drying or boiling, it is more economical to use higher pressure in order to obtain the greater rapidity of result from the higher temperature. Even in paper mills and the finishing departments of textile mills it is usual to find pressures of from 5 to 10 lbs. used for drying. In laundries, in beweries, in confectionery boiling, in wool and cotton drying and many other lines of work, 60, 80 and even 100 lbs. pressure are usually employed, and in all these cases the pump and receiver method is wasteful. It must be remembered that in a dry-room, for instance, on which 80 lbs. pressure is carried, the water of condensation as it leaves the outlet, and while still under pressure, has almost the same temperature as the steam from which it originates, that is to say about 320 degrees F. When this water reaches atmospheric pressure, it at once cools by expansion to the boiling point, and throws off 108 degrees of its temperature, and a considerable portion of its own bulk in the form of expansion vapor, all of which is a dead loss. It is manifest to the most inexperienced new hand, that if this water can be carried back direct to the boilers without being allowed to expand, there will be an absolute saving of the amount of coal necessary to re-heat this water by the 108 degrees that it has lost. When one recalls the fact that steam or hot water under even 5 lbs. pressure has a temperature 16 degrees, at 10 lbs. 28 degrees, at 30 lbs. 62 degrees and at 60 lbs. 95 degrees above boiling point at atmospheric pressure, and that between 10 and 12 degrees increase in the temperature of the feed-water means a theoretical saving of 1 p.c. in the fuel account, it follows as a natural consequence that it is wrong in theory as well as in practice to cool off water and then spend good money in replacing a loss of heat that can readily be retained and used over again.

Stormont Mill Instalation.

If the water can be returned into the boilers above the evaporation point, at atmospheric pressure, the gain is very much larger in proportion than if the boiler-feed is below the boiling point. The reason for this is that the working capacity of the boiler has been changed, and has been brought to a state where the boiler is more efficient in heat-units. This difference of efficiency must be also credited to this method of feeding, and the change will naturally show greater total results, than if the saving has been computed from changes due to the difference in the temperature of the feed-water alone. I give one interesting case out of a number I have met in my own experience. In the Stormont mill of the Canadian Colored Cotton Mills Co , at Cornwall, Ont., when the average temperature of the boiler-feed was 165 deg., five 80 h.p. boilers were used to do the drying and dyeing. Under the re-arrangement now in force, about 80 per cent. of the feed-water goes back direct to the boilers through return traps at 280 degrees, the make-up water at 140 degrees making the average temperature of the boiler-feed 252 deg. F. This shows a gain of 87 degrees with a theoretical saving of about 8 to 9 p.c. in fuel. In reality, two of the boilers have been shut down, the other three are more efficiently operated, and the actual saving in fuel is over 30 p.c. allowing for the fact that a portion of the dyeing plant has been removed to another mill. This was originally a receiver and pump lay-out with the make-up water running into the receiver-tank to cool the returns, and nothing was done by me, except to handle the returns independently from the make-up. The cost of making the change actually pays for itself in this plant every six months.

In many sections of Canada, and particularly throughout Central and Western Ontario, another consideration is that of the quality of the feed-water. Every engineer realizes the value of using the condensation over again, and how much it improves his general conditions to minimize the amount of fresh water that is fed into the boilers, and most of which in many places has to be paid for. And yet, for some unknown reason, I find many plants where the engineer appears to have failed to convince his owners. Only last week I was in a factory in Western Ontario, where the feed-water is so bad that the 2-inch feed pipes to the boilers are practically choked up completely every four weeks by the heavy deposit of solids from the water. In this same plant, the exhaust from two engines and four pumps is utilized for heating water for manufacturing purposes, but every drop of this valuable condensation is allowed to run into the sewers. Enough distilled water is wasted to feed one 125 h.p. boiler practically continuously.

If it were a matter of enormous expense or engineering difficulty to save and use this water, one could understand the objection. But it is such a simple problem, and as this water is always at or near the boiling point, the saving in fuel would also pay for the cost in a reasonable time. All that is necessary is an oil-separation system, and a trap or pump that will lift this water back to the feed system.

While the attention of power users in Ontario and elsewhere at the present time is being largely attracted to electricity, this also opens up an equally large field for the steam-trap, especially the return trap. While we have our good Canadian climate to contend with, and while we need heat for boiling, drying and other purposes, so long will we require steam. Where steam is used for heating only, the return trap will operate efficiently with a much lower boiler-pressure than is required to work a pump. However, it is entirely automatic and its simplicity, lowness of operating and up-keep cost, and other advantages, make the return steam-trap in every way more desirable than a pump for boiler-feed purposes. Where the lift from the lowest point of drainage to the top of the boiler is low (say, 6 to 8 feet), a boiler-pressure of 6 to 10 lbs. is ample.

A very little experience will show that results will be obtained much lower in cost than by any other system of heating. There is no loss of heat-units between the point of drainage and the boiler. This is the important factor of saving.

Another equally important matter, and in fact one that in some cases is more important, is that of the proper trapping of steam-using machinery of every description. It is a point that has been very much neglected by the engineering profession. The steam-trap in general has been condemned by many engineers and is a cause of dissatisfaction in many factories and plants. An examination of the conditions will often show the reason. The chief reason, in my experience, is that steam-traps are seldom purchased intelligently. This may appear to be a strong statement to make, but it is an absolutely true stricture, and one which I am able to substantiate.

Causes of Trouble.

The first great cause for this, is that extremely few engineers take the trouble to find out what the actual quantity is in pounds or gallons of water that is condensed in any given process or machine. The ratio of water condensed from steam varies enormously according to the service performed by that steam. It is ordinarily calculated that one square foot of radiation used for heating an ordinary building will condense .625 of a pound of water per hour, when the building has been heated to 68 degrees F. But this will vary according to the construction of the building, the amount of glass surface

and the humidity of the air as well as its changes in a given time due to wind. Condensation in a dry-room will vary according to the moisture of the goods being dried. A mangle in a laundry will condense more steam or less, accordingly as the quantity of the goods passing over it in a given time is greater or smaller. Indirect coils where air is forced over the pipes, will show enormous differences when the air is drawn from out-of-doors and when the air is re-circulated within the building. A vacuum pan will condense steam much more rapidly than a pan in which the same liquid is boiled at atmospheric pressure. Every process shows different results, and a proper test of the quantities almost invariably shows that the ordinary methods of guess-work run from 25 p.c. to 50 p.c. too low. It is quite usual to find a steam-trap with an interior valve-opening of ¼-inch, and actually able to discharge about 10 lbs. of water per minute with 5 lbs. pressure, placed where it has to take care of double that quantity of water, a thing that it is not possible to do. The trap floods, it refuses to do work that is against all natural laws, and in consequence the trap is blamed, and not the man who attempted to force it to do impossibilities. A certain amount of blame also attaches to the engineer, because the chances are that he probably did not by actual personal investigation, find out for himself the size of the opening through which the water had to pass. On the other hand, a certain amount of blame attaches to the makers of these traps who fail to inform the engineering public of this most important detail in trap construction.

Ordinary so-called catalogue ratings are useless. They are usually based upon a fixed pressure of, say 50 pounds, and their drainage capacity in feet of one-inch pipe is misleading. No allowance is made for varying conditions, and a trap that will handle a given quantity of water at 50 lbs will do nothing like that amount at 5 or 10 lbs. pressure.

Every engineer knows that in order to obtain from steam the heat-units which he wishes to utilize, he must first condense that steam. Engineers know that in order to obtain the best results the apparatus must be drained quickly and most engineers know that condensation does not usually leave the apparatus in a steady stream, but that the water nearly always comes in gulps and sudden gushes. It is this maximum condition that must be taken care of by the trap, and the most economical and useful trap is that which is a little larger than the actual average condition calls for.

With steam traps, as with every other kind of machinery, it is mistaken economy in every way to buy too small sized units. The over-loaded boiler and the over-loaded engine are expected to give poor results in the long run, and yet I think I am not in the least guilty of exaggeration when I make the statement that fully 60 p.c. of all the steam-traps in use in this country are overloaded and expected to do work of which they are not capable. This means another direct loss in the efficiency of the apparatus being drained, and in many cases reduces the output as much as one-half.

I wish to emphasize this important feature, and it covers the two great points to be aimed at in the economical handling of condensation, namely, that, first, all steam-using machinery should be amply and quickly drained, and secondly, the water of condensation kept under pressure and returned direct to the boilers without loss of its heat-units.

Trap System.

The method of doing this is simple. A proper system of proper traps will do the work automatically. The upkeep expense is practically none, and depreciation allowance less than that of any other part of an ordinary power-plant. Return lines should be covered to retain the heat in the water: this is a practice which I always suggest and which the results justify.

It is usual in most steam-using plants to cover the supply pipe and leave the return pipes uncovered. You will tell me that the reason for covering the supply lines is to prevent excessive condensation in the line through radiation of heat through the pipe. My argument goes farther. Prevent that same radiation loss in the return. It represents just as much cool on the return side as in the supply side. If you can handle your water into your boilers under pressure as hot as you get it, why allow any unnecessary loss at either end? Pipe-covering only represents a small first cost; loss of heat by radiation represents a perpetual expense in coal.

By a proper trap I mean one of ample discharge capacity, and not a trap of the kind that requires a cooling of the water to open its valve, such as the usual expansion type. Remember that your object is to utilize as fully as possible every heat unit contained in the water as it leaves the place of condensation. The rest is merely an application of ordinary common sense and reasoning power. Get your condensation back above the boiling point at atmospheric pressure, and you are making money.

It is difficult to imagine what argument any owner or engineer can set up against the proofs of economy that can be submitted in favor of this method and yet I find that many owners and engineers of plants where the old methods exist have the greatest prejudice against venturing on a change that is such a simple and reasonable one. I have made these changes in a great number of industrial establishments, and in every case the owners have expressed their regret that the change had not been made sooner.

One question has been frequently put to me, and that is: "If this thing is so simple and if the saving is so large, why has it not long ago become the general practice?" "Why is it not the rule rather than the exception?" My answer to this is that this is a young country, and that technical education was until recently almost an unknown quantity. Our conditions in the early days were peculiar. We had an apparently unlimited amount of fuel at our doors, and we were a wood-burning nation, even our railways burning the wood that was piled up everywhere, a refuse from the clearing of the land. Then we began to manufacture, and every aim was directed at increase of output. Go to many of our largest manufacturing establishments to-day, especially those that have grown with the country during the past thirty or forty years, and I can instance numbers where the original plant can be traced, now a small corner of a large factory. Around it have grown the subsequent additions and extensions, a new building here, another there, not built and located according to one preconceived plan, but simply thrown on anywhere where room or convenience dictated, to meet the temporary exigencies of our growing time. "Output" has been the moving factor.

In the meantime, cheap fuel has gone and coal must be bought. Competition has arisen in nearly every line that compels closer margin of profit. Every effort is made to procure the latest types of machinery, the most modern processes, more skilled labor. But it has only recently come to the point that every other means for cheap production having been exhausted, the manufacturer is forced to turn his attention to other methods of increasing his ever smaller margin of profit.

There is no other line left open. Wages must remain at their present high level, owing to other economic conditions. Other charges are fixed by persons whom the manufacturer cannot control, raw materials are bought in the open market where his competitors have an equal chance, and his finished

goods have prices fixed largely against his will by outside competition. The days of monopoly are gone almost without exception, and therefore he must look to decreased running costs. The United States Steel Corporation are to-day the largest buyers in the world of labor and fuel-saving devices. Only thus can they hope to increase the narrow margin between profit and loss.

This stage has only recently been reached in Canada, and it is now being forced upon the attention of all mechanical engineers.

In the eastern United States the principles which I am laying down in this paper, have been longer recognized, and I am not preaching the gospel of experiment. The methods which I am endeavoring to spread, are the result of twenty years continuous effort along these lines by engineers of experience, and to-day we can handle the most varied conditions in the light of the certainty of result attained elsewhere, and of the accumulated experience of many difficulties overcome. In the main, the whole question resolves itself, as I have stated above, into the practical application of common sense and ordinary reason to natural principles. One of my chiefest difficulties, strange as this may appear, is to persuade owners and engineers that it costs money to heat water, and that when once heated, it is cheaper to retain the heat than to allow it to be wasted and then spend more money to re-heat it. I am not exaggerating the matter in the least when I put it thus strongly. Against me is the prejudice born of long years of different usage, and it is frequently difficult to convince men, without doing injury to their self-esteem, that methods which they have been accustomed to use during an engineering life-time of perhaps many years, are not only merely out-of-date, but are also wasteful and extravagant.

I sometimes fancy that if the idea were more complex, if it involved a more intricate solution of an abstruse problem, it would be less difficult to impress its value on the average man. But gradually the engineering profession is being forced to a realization that one of the very easiest methods of reducing the fuel bill is the ridiculously simple one of not allowing the valuable heat-units contained in water pf condensation to escape to the atmosphere unnecessarily, but to retain them where they have been put at the expense of the man who foots the bills.

In conclusion, I would again impress upon you that we have no longer the fertility and large productive powers of the virgin soil. We have reached the stage already, where it pays well to glean the odd ears of corn that have dropped into the furrows.

POINTERS FOR STEAMFITTERS.

The steamfitter to maintain success should make an effort to learn something of his reputation in a community. Have the plants which he has installed worked as well as expected? Have they carried the burden he has placed upon them and made all parts of the building as comfortable as was expected by his customer? Has it been found necessary to run the outfit hard in the cold weather, or have his customers been able to run their plants economically to get the comfort which they were looking for? Has his work appeared attractive when the owners made a visit to the cellar, either to attend to the fire or to see how it is being taken care of by the servant? A great deal goes by appearance, and a man is very likely to speak favorably and enthusiastically to those who may bring up the subject of heating in his presence about any installation which comes continually under his observation.

Are there any radiators which are noisy under conditions which should not exist in the piping or the connections? Are there any of the radiator valves which refuse to operate properly and prevent the radiators filling with steam or circulating properly? Are there traps in any of the piping which reduce the capacity for rendering the services for which they are installed? Has the work been gone over after the men have completed it, to see if everything has been done as intended? Many annoyances are experienced by people from the neglect to exercise this careful inspection or supervision over work and in placing too much confidence in the workmen.

The steamfitter should be informed on the various methods of piping and systems of heating, hot water, steam under pressure and by vacuum. He should be prepared to talk to the people who have read the advertisements in the different magazines and papers, so that they will realize that he may be relied upon to furnish them exactly what they have concluded they want. Frequently customers ask questions which the steamfitter answers too quickly or without weighing the words to know exactly what the customer is seeking. There is so much advertising being done these days that, unless the steam fitter is very careful, he may give a wrong impression as to his being up-to-date and able to meet the requirements of those who are seeking his counsel.

Although there is no better advertisement than satisfied customers, it is also essential that the steam fitter should use some enterprise in bringing new business to his establishment. He cannot expect people to hunt him up just because he has a place of business and devotes his attention to a given kind of work. It is essential that he should be more enterprising than this and to enter into the competition for trade with some spirit.

At this season of the year, when people are thinking about their heating apparatus, some advantage can be derived from sending to property owners a card bearing a question as to the condition of their heating apparatus and explaining his qualifications to install new work or to make an existing heating plant more satisfactory. This card is more effective if it contains a list of those for whom work has been done and who are satisfied with the service secured. If improvements have been made to the plants of some customers whereby greater satisfaction has been derived, it certainly will add to the value of the card if this matter is brought to attention. The wider such a reputation is known, the more business it is likely to bring in.—Metal Worker.

UNDERGROUND COMFORT STATIONS.

Public Service Director Lea, Cleveland, O., suggests that underground public-comfort stations, shoe-shining stands and barber shops be established in that city at every important street intersection in the business part of the city, if the city law department finds no legal objections to this. The only portion of the street level that would be occupied would be the space necessary for stairways and another small space at the head of each stairway for an ornamental booth for the sale of magazines, newspapers, etc. Director Lea has had the plan under consideration for some weeks, and he is waiting for word from the law department before proceeding with the preparation of plans and specifications for the stations.

COOLING AIR IN HOTEL.

Air cooling is one of the features of the equipment of the Blackstone Hotel, Chicago. During hot weather, cooled air is delivered to the dining room, lobby, grill room, barber shop and banquet hall. For this work a 75-ton refrigerating machine is used. Carbon dioxide is the refrigerating medium, and the liquid carbonic anhydride cools the air by direct expansion in the air washer that forms a part of the ventilating equipment. There is also a 50-ton refrigerating machine for cooling brine for different refrigerators and also for cooling the drinking water.

The Question Box

Subscribers are Urged to Send Questions to be Answered, or to Comment on Letters Published. .Descriptions of Jobs Done or Shop Kinks are Also Invited.

THAT HONEYWELL JOB.

Editor Plumber and Steamfitter.—I am pleased to answer through your columns, the information sought by Steamfitter, of Hamilton, regarding the Honeywell system, installed by writer. Yes, the connection from the mains, flow and returns in basement were all taken as on sketch, save one or two connections on ends, for two reasons. First, to keep mains and returns together, on account of their size, and the narrow hall we had to run them along, and secondly, seeing the large size of mains used, we saw no objections whatever from a practical standpoint, to using said connections in preference to side connections, as it would have better results in equalizing the distribution of hot water to all risers, and cause water to reach end of mains which are 66 feet from the boiler, hot and in quantity, depending upon the generator to do all that is claimed for it which it is doing without a hitch.

The building is an appartment of seventeen suites, and is three stories high, having 1,954 square feet of direct wall radiation surface. The amount of coal consumed in the cold months of January and February, were one ton of furnace coal a week, without a forced fire, giving a perfect circulation in all parts and a steady temperature in all appartments of 68 to 70 degrees. Besides direct radiation, there is a maltese pipe cross inserted in boiler, to heat the domestic hot water, helping a jacket heater connected to 450 gallon tank.

Ottawa, Oct. 22. J. I. C.

HONEYWELL PLANS NOT FOLLOWED

Editor Plumber and Steamfitter.—Referring to two articles appearing in recent issues of your valuable journal on question of Honeywell Heating System, may I, as a fitter of old school recently converted to newer and more reasonable heating practice, add a few remarks.

I think that each of your correspondents has overlooked some of the most essential features of an intelligent Honeywell instalation. To begin with, I do not believe the sketch shown by J. I. C., in issue of Sept. 15, could have been a reproduction of plans submitted him by Honeywell people, but rather that it is a sketch of a job installed by J. I. C., according to his own ideas, in which some of the Honeywell ideas were embodied, and to which a Honeywell generator was attached, with, as J. I. C. says, "entire satisfaction."

I came to this conclusion quite readily, because in all the Honeywell jobs I have installed, and in all their plans and literature, I have seen, the mains end in ground floor radiators, and they do not advocate or allow "branches taken from branches."

A look at sketch will show that neither of these conditions was fulfilled.

"Steamfitter," of Hamilton, evidently overlooked these important points and attached more importance to finding out the angle at which branches were taken from mains. The writer agrees with what "Steamfitter" implies, that connections should be graduated according to distance from boiler.

Anyone who has considered the remarkable results arising from the intelligent use of Honeywell ideas, as set forth in their literature, and has taken time to think how thoroughly logical are these ideas, will be as ardent a Honeywell advocate as I am, which is my only excuse for coming into the discussion, pointing out these mistakes as understood in Honeywell practice, and encroaching on your very valuable space.

INTERESTED.

London, Ont., Oct. 24.

OLD-TIME WATER PIPES.

Editor Plumber and Steamfitter,—Can you tell me what was used for water pipes in the days before the present iron pipes? APPRENTICE.

Toronto, Oct. 25.

In America the people made use of the trunks of trees, which were bored out, the bore having a diameter of about three inches. In some cities these wooden water pipes are still in use and seem to stand the pressure. They are connected with the modern iron water pipes by a specially made fitting so that when it becomes desirable to change the wooden pipes for the iron ones it may be easily done. In olden times the people made use of lead pipes and in some instances concrete was used.—D. C. H.

JOURNEYMAN CRITICIZES MASTERS.

Editor Plumber and Steamfitter,—It was with regret that I read of the strike in Montreal. Is it not astonishing to see such conditions as stated, at this time of the year when everything is booming in our trade, and in the principal city of our Dominion, where the lowest wages are paid, the condition of trade the poorest, and the cost of living the highest. * * * While the journeymen have been urging upon the health committee the necessity of appointing plumbing inspectors of practical knowledge, the employers have been opposing the by-laws, in allowing tile pipe to be optional to iron soil pipe for drains, supporting clerks, friends, and lacrosse players for inspector of plumbing work, and favoring different unsanitary appliances to replace the reventing pipe of fixtures in buildings. * *

Conditions as they now exist are to the detriment of both employer and employes. Would it not be logical for the employers to forget the past, and meet the committee of the men, and adjust matters, for the best interest of all concerned and in future work hand in hand, for the bettering of our trade, which demands, at the present day, the most intelligent men the industrial world can produce.

JOURNEYMAN.

Ottawa, Oct. 15.

Editor's Note.—Controversial references to the journeymen plumbers' strike in Montreal have been eliminated from the above letter. It is considered best, however, to allow the journeymen to be heard upon questions affecting the trade as a whole. The Plumber and Steamfitter, however, cannot allow its columns to be used for a controversy over strike details. As a technical newspaper The Plumber and Steamfitter cannot do more than give the news and discuss technical questions affecting the trade.

Cutting Patterns in the Tin Shop

Readers of Plumber and Steamfiitter are Requested to Make Use of This Department—Questions Regarding Patterns Will be Answered by Experts—Discussion is Also Invited on Any Matter Pertaining to the Tin Shop.

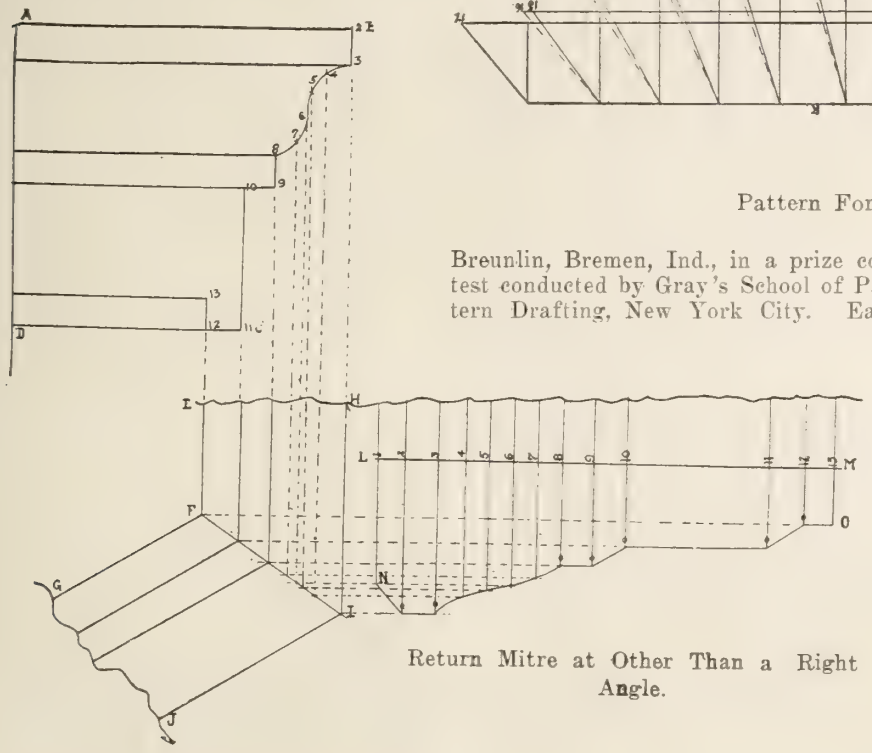
RETURN MITRE IN CORNICE.

In laying out a pattern for a return mitre at other than a right angle, as in a cornice at the corner of a building, writes S. A. Campbell in the Hardware Trade, let A B C D be the elevation of a portion of the cornice and let E F G be the plan of any angle around which the cornice is to be carried, a pattern being necessary for an arm of the mitre. Complete the plan by drawing the line HI and IJ intersecting at I, giving the correct projection of the moulding from EF, and FG. Then draw the mitre line between the points F and I.

It will be noticed that the arm E-F-I-H has been projected directly from the profile BC. In so doing, placing profile and plan in correct relation with each other. Divide the profile BC in the same way as before in any number of convenient points and from the points thus obtained drop lines vertically on to the mitre line in the plan FI.

At right angles to the cornice, as shown in plan, lay out a stretchout of the profile as shown by LM through the points in which draw the usual measuring lines as indicated. Place the Tee square parallel to the line or what is the same at right angles to HI and bringing it successively against the points in FI. Cut measuring lines of corresponding numbers, then a line drawn through the points thus obtained as shown by NO will give pattern required.

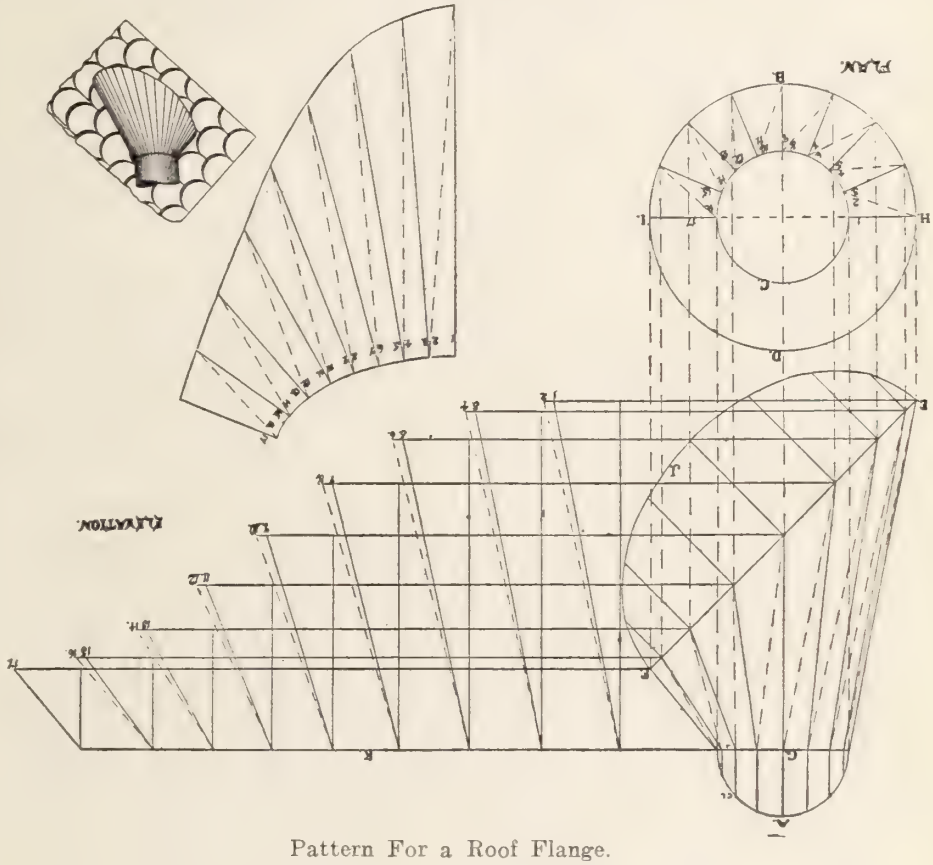
As intimated at the beginning of this problem, the angle EFG represents any angle whatever and the course to be pursued is exactly the same whether it be acute or obtuse. The more acute the angle EFG, the longer the mitre line FI becomes. as may be ascertained by experiment, producing a corresponding increase in the projection of the different parts of the line LM.



Return Mitre at Other Than a Right Angle.

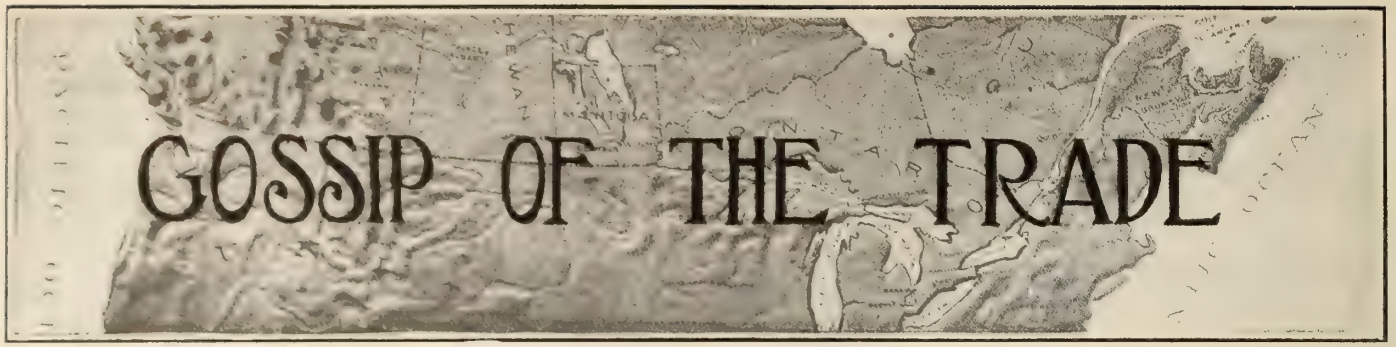
PATTERN FOR ROOF FLANGE.

The accompanying drawing is one of the prize sketches submitted by Henry Breunlin, Bremen, Ind., in a prize contest conducted by Gray's School of Pattern Drafting, New York City. Each contestant had to submit ten drawings and Mr. Breunlin won first prize.



Pattern For a Roof Flange.

The sketch gives a general idea of a roof flange and it will be noted that the base of the flange is made circular in the plan view, giving the opening through the roof an oval form. In a problem of this sort what is essential, of course, is the determination of the true lengths of the inclined elements of the flaring member of the flange. In the usual way the heavy lines are drawn for the true elements, as they may be called, with intermediate lines marked dotted. Each of these full and dotted lines of the flaring member is the hypothenuse of a right-angle triangle, the apex of which is located in the circumference of the article G in elevation and C in plan, and the position of the base of the triangles is marked by the full radial lines in the plan drawing and by the intermediate dotted lines. Accordingly horizontal lines are drawn from the mitre lines at the roof to the right of the drawing and perpendicular to these are drawn at convenient points a number of vertical lines up to the level of the circle G. As indicated, distances are laid off on the horizontal lines from corresponding vertical lines, these distances being equal to those obtained from the radial and intermediate dotted lines of the plan. The true lengths of the full and dotted lines are obtained as indicated by the inclined lines or hypothenuses of the triangles. The development of the pattern itself is along the usual lines.



Gagnon & Frere, plumbers, Montreal, have been registered.

F. Mallett has started a tinsmith business at McAuley, Man.

Gleason & Russell, plumbers, Cowansville, Que., have been registered.

T. P. Boylis has started a plumbing and steamfitting business at Moose Jaw.

R. G. Sturgeon, master plumber, Peterboro, was a visitor in Toronto last week.

A meeting of creditors of W. B. Geary, plumber, Belleville, was held on Oct. 25.

J. Sutherland has sold his sheet metal works, Vernon, B. C., to the J. W. Glover Co.

Robert Haleron has bought the plumbing business of E. W. Bishop, Greenwood, B.C.

Wm. Moore, former hardwareman, Kirkton, has purchased a hardware, tin and plumbing business at Arthur, Ont.

The Saskatoon Hardware Co. secured the heating and plumbing contract on the John Deere Co. building, Saskatoon.

J. J. McCrea represented Winnipeg steamfitters and Helpers' Union at the convention of the United Association in St. Paul.

Plans are under way for the establishment of a branch of the Y.M.C.A., in Cobalt. A swimming pool will be installed.

E. Johnson, plumber, tinsmith and fitter, has purchased the stock of E. Ryckman, Nelson, B. C., and will start on Sirdar Ave.

Hamilton & Stott, St. Thomas, have the contract for heating plant for the Helena Costume Co., London. Contract price is $6,000.

Stevenson & Malcolm were recommended for the heating contract for the Morlock factory, Guelph. Contract price is $2,250.

A. Chesterfield, tinsmith and plumber, St. Mary's, has returned from Toronto much benefited in health after medical treatment.

Ald. Hugh Wallace, Hamilton, who has had several agencies for plumbing goods, has put in a complete stock of plumbing supplies.

McKinley & Northwood, Ottawa, have been awarded the contract for plumbing, heating and ventilation of the Hope building, that city.

Tenders are asked for the heating and ventilation and plumbing of an office building in Quebec for the Quebec Railway, Light, Heat and Power Co.

The Winnipeg Board of Control is calling for tenders for the construction of sewer connections and installation of plumbing on certain properties.

F. A. Sparks, Minneapolis, is supervising the installation of a steam heating apparatus at the Empire Hotel, Saskatoon. He will start in business there shortly.

Ald. Rodgers, master plumber, Hamilton, spent Thursday, Oct. 20, in Toronto, but on his return home had to take to his bed. Toronto water is blamed.

Harry Hogarth, of Fiddes & Hogarth, Toronto, was a member of the Canadian Manufacturers' Association excursion party which visited the Pacific Coast in September.

Arthur Bakum, plumber, Toronto, died in Grace Hospital, Wednesday, from a fractured skull. A plank fell from an upper storey of a new house at Sunnyside Ave. and Marmaduke street, striking him on the head.

The Ontario Provincial Government has awarded the contract for the installation of the ventilating apparatus in the parliament buildings, Toronto, to Purdy, Mansell & Co., that city. The cost will be about $50,000.

Prince & Co., 550 Bloor Street west, Toronto, have purchased the hardware and plumbing stock of T. W. Slean, 544 Bloor Street West. Mr. Slean is removing to Oakville, where he will establish a plumbing business.

Local 78, Toronto, International Association of Steamfitters, elected officers as follows: President, E. Andrews; vice-president, J. McKenzie; inspector, T. McKenzie. J. Cosgrave was elected to the examining board. A gold locket fob was presented to retiring president, P. J. Smith.

BUILDING TRADE ACTIVE.

Recent building permits in Edmonton include the following: Blacket & Dawson, store, $5,000; C. E. Smith, dwelling, $2,500; Patrick Dunn, dwelling, $2,400; Frank McMahon, dwelling, $2,400; A. W. Robson, dwelling, $2,450; A. Long, dwelling, $2,000; Clifford C. Mitchell, dwelling, $2,250; Alex. Stewart, dwelling, $3,000.

Among building permits of recent date in Vancouver are: M. A. Whilan, dwelling, $2,000; J. S. Martin, store, $6,000; R. F. and R. A. Bristol, dwelling, $3,000; F. Wilkinson, storage warehouse, $3,500; J. A. Davis, dwelling, $3,000.

TO GET PURE WATER.

Here is a simple method of sterilizing drinking water. It entails little or no cost, nothing but the simplest apparatus, does away with the necessity of boiling the water, and gives water which is free of all harmful bacteria.

Take a teaspoonful of pure cloride of lime, smoothing off the surface of the spoon with some flat object, so that too much of the chemical is not used. Dissolve this in a teacupful of water, and add to this three more cupfuls of water. A teaspoonful of the resultant solution added to a two-gallon pail of water, and allowed to stand for ten minutes, will give a proportion of .4 to .5 parts of free chlorine to a million parts of water, sufficient to purify the latter from every trace of harmful bacteria. There is no taste or odor to this sterilized water, and the free chlorine, in itself harmless, soon disappears.

This method has been perfected and thoroughly tested with very impure water, by Doctors Nasmith and Graham of the Provincial Laboratory. It was intended for the use of prospectors and miners, but in the present condition of Toronto water should be useful in that city.

PLUMBING RULES AID THE PLUMBER.

When our Auburn rules first became law, writes John H. Chase, Bangor, Maine, there were two practicing physicians and one dentist elected on the Board of Health. The dentist was chosen by the board as plumbing in-

spector. We worked along in that way for some time until a brother-in-law of one of the physicians went into the business, and this physician thought he could inspect his brother's work and he began to do that. The other plumbers soon got wise to that and made complaint and we had a hearing, bringing him before the Mayor.

At that meeting we questioned him as to his method of testing. He said that he usually poured in water at the highest fixture, and if the pipe did not leak, he pronounced it all right. You can see that the inspection that this plumber's work received was simply no inspection at all and gave him a great advantage over the rest of us. After this hearing the doctor graduated from inspecting plumbing. After that we had another man for inspector, who gave us better service, until he was taken sick and finally died.

I was elected on the board five years ago and we have now, in addition to myself, two practicing physicians, who look after the contagious diseases and leave the plumbing end to me usually. We have an inspector who has served some four or five years and, as far as I know, is giving the best of satisfaction not only to the plumbers, but to every one who is willing to do what is right. Sometimes he finds a man who is not willing to comply with the rules, but that does not jar our inspector, who has just enough Irish blood in him to make him a good fighter. Whenever any question comes up, we make it a point to uphold our inspector and we have but very little trouble.

In times past some of our plumbers have tried to dodge the rules, but have found it no use and now we have practically no trouble. And right here I want to say that I cannot understand why a plumber should wish to dodge, because certainly he is getting more work and more profit out of plumbing by living up to the rules.

I cannot see why, in all cities, the plumbers do not make special effort to have a plumbing ordinance adopted by the city and have it approved by some Judge of the Supreme Court, making it a law that can be enforced. There are many advantages derived from this. When we go out to figure work we know how it has got to be put in. We know our competitor has got to comply with the rules in figuring and if he gets the job it has to be done according to our prescribed rules.

We have a great many calls for licenses from parties outside the city, who have a friend perhaps, building a house and they want to do his plumbing. We have a right to refuse to grant a license in that case. I have held that unless a man is working for some firm or is permanently located he is not entitled to a license.

I believe it should be the duty of every man in the plumbing business to work for a local plumbing law as well as a State law. I also believe that the rules should be the same in all cities, so that when a man comes from Lewiston to do work in Bangor he will find the same general rules which he has in own city and rules with which his journeymen plumbers are accustomed. I think the place to start for a general State law is with the State Board of Health. I believe every man in the business should put his shoulder to the wheel and work for this object, which will certainly benefit us all.

NEW JOINT LEAD CEMENT.

A lead cement for making pipe joints without calking anchoring work, the solidification of foundation work, or for use wherever lead is ordinarily used, is a specialty being introduced in the plumbing trade of the United States and Canada. The chief points of merit claimed for this material are that its use in joint-making materially reduces the labor cost, as no calking is required; its tensile strength is almost twice that of lead, and being lighter than lead it will go farther, pound for pound, than lead. A further knowledge of this material may be gained from the following directions for its use: Break the material into small pieces and melt in a kettle, crucible or ladle over a slow fire of wood, charcoal, gas, petroleum or alcohol, stirring well while melting. Care must be taken that the material is not overheated, as in that case it will burn, showing a yellow vapor strongly smelling of sulphur. As soon as the cement is completely melted and gives a syrup-like appearance, the kettle, crucible or ladle must be taken from the fire. Continued stirring will make the mass as liquid as water. In this condition it is ready for use. The liquid is poured into the joints in a similar manner to the pouring of lead. When properly melted the liquid, it is claimed, will flow readily into the small crevices of the joint without any forcing, and when it hardens the joint is complete without further labor.

THE "HELPER" WILL FIND:

First: That it don't pay to buy cheap overalls and jackets. The best are not too strong to stand the strain which will be put upon them from time to time. Buy them a size or two too large for they will shrink.

Second: It is the best policy to put on clean overalls each Monday. You will not only look more respectable, but you will feel better and you will not deface the building in which you are working.

Third: Overalls soaked over night in kerosene will wash out very much easier and therefore last longer.

Fourth: That he should own a four-foot rule, a pair of pinchers and a good reliable pocket knife, which should be kept sharp.

Fifth: That gloves on the hands are a confounded nuisance, except in the winter time.

Sixth: That if the work is extra dirty, by washing the hands in lard oil and wiping them thoroughly he can remove the dirt.

Seventh: That it pays to be on time and get a reputation for being on the spot when wanted.

A GROUP OF DELEGATES AT THE TORONTO CONVENTION.

Harry Mahony, Guelph; James Marr, Calgary; Frank Chapman, Hamilton; C. E. Bull, St. Thomas; W. B. Sime, Port Arthur, and Wm. Mansell, Toronto.

New Buildings, Water and Sewerage Systems

Opportunities Offered by Municipalities and Private Enterprise for New Plumbing, Heating, Ventilating or Sanitary Systems—Work Being Undertaken in Every Section of the Dominion.

Municipal Undertakings.

A twelve-inch main will be constructed on Michigan street, Victoria, between Montreal and Oswego streets, joining the main drain at a cost of $800.

The Montreal city council granted the contract to Lemoine & Desy, for the construction of the new intake for the aqueduct at Point St. Charles. The contract price is $155,000. Work on this intake will be started at once.

The Blairmore, Alta. council has let the contract for the installation of a waterworks system to W. J. Budd, of Blairmore. The water will be taken from Wolf Creek at a point about two miles distant and will be brought to the village in 12-inch wire wound wooden pipes.

General Building.

Warren Bros., of East London, are contemplating the erection of a large business block.

A permit was issued to C. S. Shipman for an apartment house at Winnipeg, to cost $50,000.

J. Graham, Winnipeg, intends building a $15,000 block to consist of stores and apartments, at Norwood.

John McKnight, Toronto, is erecting a $9,000 residence, and has obtained a permit from the city architect to do so.

Permits granted lately at Victoria include: C. H. Fitzherbert, alterations to Queen's Hotel, $4,000, and H. T. Knott, dwelling, $3,600.

The contract has been let by the C. P. R. for an hotel at Proctor, Kootenay Lake, at a price of $150,000. C. W. Sharp, of Winnipeg, has the contract.

The general contract for the erection of a two-storey factory building at Montreal, for the Montreal Smallwares, has been awarded to D. G. Loomis & Sons, Cote St. Paul.

W. J. Palmer, eight-room dwelling, at a cost of $3,500, and H. D. Tilley, eight-roomed house, at a cost of $3,785, are two recent building permits granted at Oak Bay (Victoria).

A strong company is being formed to erect at Levis a vast hotel, with from 600 to 700 rooms, and which will cost $1,000,000. The Quebec Central and Grand Trunk Railways are interested in the project.

The contract for the erection of the new building for the New Brunswick Telephone Co., at St. John, has been awarded to B. Mooney & Sons, of that city. The contract price is about $22,000, and the building is to be ready March 1.

F. Neil Brodie, of St. John, is preparing plans and specifications for a warehouse for Jones & Schofield, Campbellton, N.B. He is also preparing plans and specifications for the Bank of New Brunswick, to replace the one destroyed by fire at that place.

It is the intention of the C.P.R. to build twelve additional hotels across the continent during next year. Five of these will be erected at St John, Toronto, Nelson, Ottawa, and Golden B. C., and the remaining seven at different points on the line. Considerable additions will also be made to the Hotel Vancouver.

The contract for erection of the McLaren Hotel, Winnipeg, has been awarded to C. W. Sharp & Sons, at $175,000. Building to be completed by June 1, 1911. The contract for the erection of the Bakery Building, owned by W. R. Milton, Winnipeg, has been awarded to the Glengarry Construction Co., the plumbing, etc., will be done by C. C. Young Co. Estimated expenditure, $37,300.

Public Buildings.

The trustees of school section No. 1, Clinton, Ont., have decided to raise $5,000 in one year for the erection of a new school.

The contract for alterations to Naval Hospital for use of Naval College, Halifax, has been awarded to Faulkner & Macdonald.

Tenders are being invited for the erection of an addition to the Nanaimo postoffice, the work being estimated to cost about $15,000.

The contract for the fire alarm and signal station to be erected at Winnipeg has been recommended to D. D. Wood for $62,711.

The Calgary School Board has voted to expend $500,000 on three new schools, an addition to the High School, and three sites for new schools.

The Fire, Water and Light Committee of the Fort William City Council awarded the contract to M. H. Braden at $17,000 for the new fire station.

Jos. Jerrett has secured the full contract for the new Carnegie library building at New Liskeard, the contract price being $9,890. Work on the building is in progress.

The Board of Governors of McMaster University, Toronto, have decided to sell the property on which the present buildings are and purchase a site on the outskirts of the city.

The successful architects in the competition for the Regina library plans are Storey & Van Egmond. The plan provides for erection of fireproof building at a cost of $40,000.

The contract for the repairs and alterations required at the New Westminster court house was awarded by the provincial public works department to Contractor J. A. Allen at $13,500.

The isolation hospital site at Calgary will be offered to the government upon which to build an armory. The government agreed to pay the cost of the erection of a suitable armory, provided the city furnish the site.

The sum of $500,000 has been pledged by Montreal business men and additional capital promised from outside towards the proposed Canadian-Franco-British-American Exposition next year.

TRADE SCHOOL AT BUFFALO.

The educational department of the Y. M. C. A. of Buffalo has arranged to incorporate into its institute a fully-equipped plumbing school. Beginning October 1, the association will take over and continue under its direct supervision the George P. Brantall Plumbing Trade School. Mr. Brantall, a master plumber of many years' standing, will continue to instruct in the school. The school is well equipped with devices and tools used in the trade. Skeleton houses will be constructed in the school, and in these the students will obtain practical experience in general work, being taught by actual procedure how to make sewer and water connections of all kinds, the instalation of bath tubs, water closets, and all plumbing fixtures. Students will also be given a thorough course of instruction in drawing, reading of plans and estimating quantities and costs for contract work.

Henry Vivian, English member of Parliament for Birkenhead, England, was a recent visitor to Toronto. Criticising sanitary conditions in Canada, he said, "You allow your towns and cities to grow without any regard to the future. There ought to be by-laws forbidding the erection of too many houses on one lot and providing for proper garden spaces around all houses. There ought to be, in some of your cities, better regulations, concerning the sanitary equipment in houses I know of one Canadian city where the conditions in this line are such as would not be tolerated for twenty-four hours in the old country."

GALT MANUFACTURERS EXPANDING.

The Galt Brass Co., have purchased the patterns of the Mann Brass Works, London, and will begin the manufacture of compression work and other plumbers brass goods in January. In the past valves have been their specialty.

The Canadian Brass Co., Galt, are introducing new quick opening compression coarse thread sink, basin and bath cocks.

PLUMBING AND HEATING MARKETS

MONTREAL.

Oct. 29.—There is no break in the demand for plumbing and allied goods, and many of the jobbing and manufacturing houses state that they have never known such busy times. The plants are working night and day and one prominent official was heard to regret the coming of Thanksgiving day because it meant an interruption in the flow of the output. Although delivery is kept up very well, there is no margin over, and any sudden extra pressure of business will produce a shortage for the time being.

With all this, prices are keeping unchanged, although naturally very firm. The radiator and boiler makers are well together, and the prices now obtaining seem to be generally regarded as reasonable. Lead pipe is naturally firm owing to the growing strength of the crude metal, while solder is firm by reason of the high prices in tin.

Soil Pipe.—There is no let up in the demand for soil pipe, and makers are hard pressed to meet orders. Delivery, however, is under the circumstances being made very well. The market is firm and unchanged and we quote light 60 off, medium and heavy 70 and 10.

Lead Pipe.—There is a very active demand for lead pipe. All the material is being put in at once so that no stock is being accumulated in users' hands. The price is very firm as the crude metal continues to show stronger figures.

Solder.—The high price in tin makes solder very firm, but no change is reported. The demand is very good, especially from the roofers. We quote half and half 22c, wiping 20½.

Iron Pipe.—As in the other lines there is a good demand for iron pipe, and the boats are taking heavy shipments for those who wish to avoid the winter rates so far as possible. The market is unchanged, and we quote: ¼-in. black, 63; galvanized, 48; ⅜-in. black, 59; galvanized, 44; ½-in. black, 69; galvanized, 59; ⅝ to 4-in. black, 71½; galvanized, 61½.

Radiators and Boilers.—There is still the most optimistic tone among the heating houses. Business has been well maintained, and there is difficulty in meeting the orders that are steadily coming in. Prices are unchanged and there is complete harmony among the various makers. The market is unchanged, and we quote: Steam boilers, 60 and 5; round hot water boilers, 50 and 10; hot water radiators, 50 and 7½; steam radiators, 50 and 7½ and 2½ per cent.

Enamelware.—Business is extremely good, and the plants are hard pressed to meet the demand. Very little stock is at present being carried by buyers and what is ordered goes out at once into the building. The market is thus in a very healthy condition. Prices all the way round are firm.

Scrap.—There is little change in scrap although prices are firming in sympathy with the crude markets. We quote: Heavy copper wire, 11½c; light copper bottoms, 10c; heavy yellow brass, 8c; light brass, 6¼c; tea lead, 2½c; heavy lead, 2¾c; scrap zinc, 3c.

TORONTO.

Toronto, Oct. 28.—The plumbing trade is at its busiest. Locally the finishing work is in progress with every prospect of a prolongation for some time of present activity. All enamelware lines are in demand and the price in a couple of lines has seen a small advance.

In steam and hot water heating systems business is promising to break all records. Supply houses are in receipt of orders that are crowding them to capacity to fill. The demand from the West is particularly heavy. it is anticipated that the close of the rush season in these lines will see depleted stocks, owing to the proportions of the demand this year.

Enamelware.—The demand continues brisk, particularly from the city. Supply houses report heavy orders from all sections. Small increases have been made in sinks. Rolled rims 16 by 24 inches have gone up from $6.30 to $6.50 and the 18 by 30 size are now selling at an advance of 25 cents, going from $6.85 to $7.10. The fact that the finishing stage has been reached with the year's new buildings accounts for the activity in these lines.

Soil Pipe.—Demand is still fairly brisk, the market being a little firmer. Light pipe is still quoted at 60 and 10, but one supply house quotes 60 without the additional 10. Medium and heavy is quoted at 70 and 10; 7 and 8-inch sizes, 50 per cent. There is no change in fittings which stand at 70 and 10 off.

Lead Pipe.—The demand remains firm, with the market the same. Prices are quoted at 30 per cent. Lead waste stands at 9c per lb. and calking lead at 4½c per lb. Traps and bends are still quoted at 50 per cent.

Iron Pipe and Fittings.—There is still a good demand and the market is a trifle easier. The discounts on malleable fittings are quoted from 37½ to 40 per cent.; and cast iron fittings from 60 to 67½, which is a few points easier. Cast iron bushings are 70 and malleable 65. Nipples are quoted at 75 and 10; headers 60; flanged and malleable-lipped unions, 65 per cent. Galvanized pipe is $6.35 and black pipe $4.70 per hundred feet, 1-inch size.

Solder.—The price of solder is firmer. Quotations show an increase of 1c for half-and-half, market prices to-day being 20½ to 21c; wiping is stationary at 18c to 19c. There is a good supply and demand is strong.

Brass Goods.—The demand is very heavy and certain to grow from now on. Plumbers' brass goods are selling readily. Prices remain the same.

Boilers and Radiators.—There is a strong market for boilers and radiators with the market still easy. The prediction that the season's trade would prove a record breaker bids fair to be fulfilled. Heavy orders are still being received, most of them for immediate shipment. Discounts are quoted at 50 and 10 for hot water boilers and radiators, with an additional 2½ off steam radiators.

Metals.—The only change in price is an added 2c for tin which now sells at 39c. Copper is stationary at 13½c; lead at $3.80 (imp.) and $3.75 (dom.).

Scrap.—The market stands firm, iron being ½c, copper 10c to 11c; lead 2½c.

MEETING OF MASTER PLUMBERS.

A meeting of the Toronto Master Plumbers' section of the Retail Merchants' Association was held on Friday night, Oct. 28, with President Cooper in the chair and a good attendance of members.

A number of questions of vital importance were discussed, including the rights held by the retail merchants and the limitations imposed upon them by recent legislation. The most important clauses were discussed at some length, keen interest beng dsplayed by all the members. Chairman Passmore, of the entertainment committee, reported on arrangements made for a series of social gatherings during the winter months. It was decided to draw a schedule at once of the proposed dates and to hold all entertainments in the R.M.A. rooms. After discussion, it was deemed wise to buy a number of tables to be used for this purpose and the committee was authorized to go ahead with all arrangements.

Negotiations which have been going on between the Steel and Radiation Company, Toronto, and the Warden King Company, Montreal, regarding the purchase of the latter company's plant by the first named corporation, are at a standstill, and it seems unlikely now that the deal will go through.

Anthes Foundry, Limited, and Steel & Radiation, Limited, Toronto, whose plants adjoin each other on Pardee Avenue, are asking the city for power to close the street and use it for railway siding purposes.

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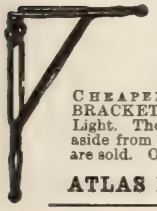

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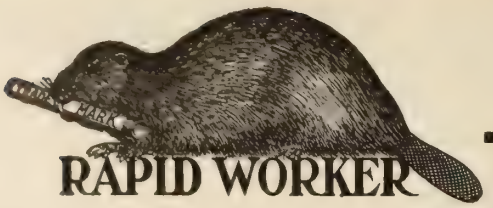

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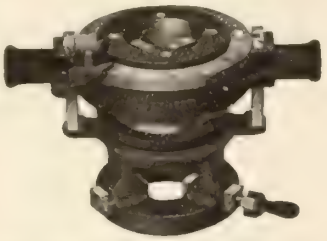

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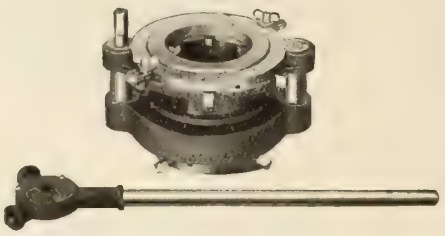

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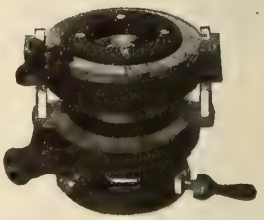

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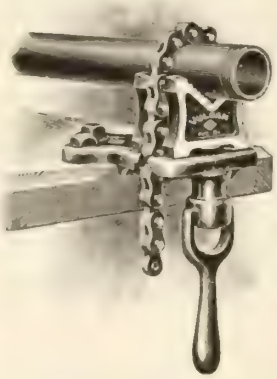

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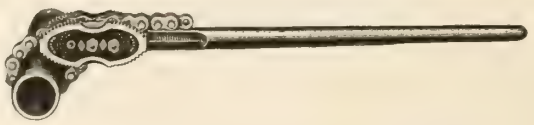

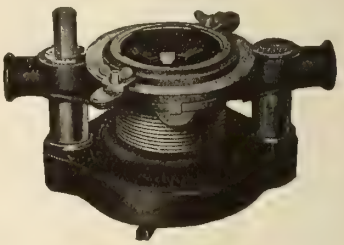

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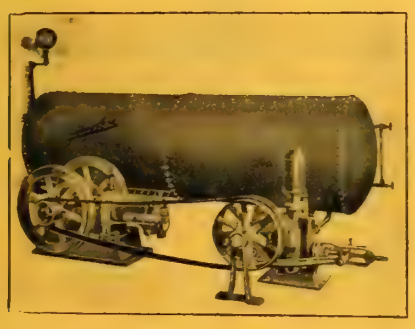

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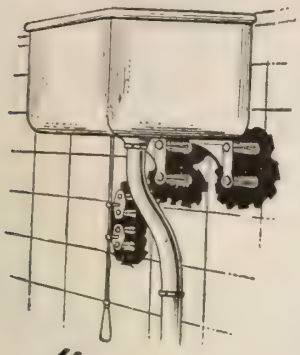

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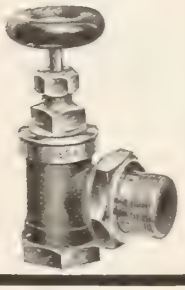

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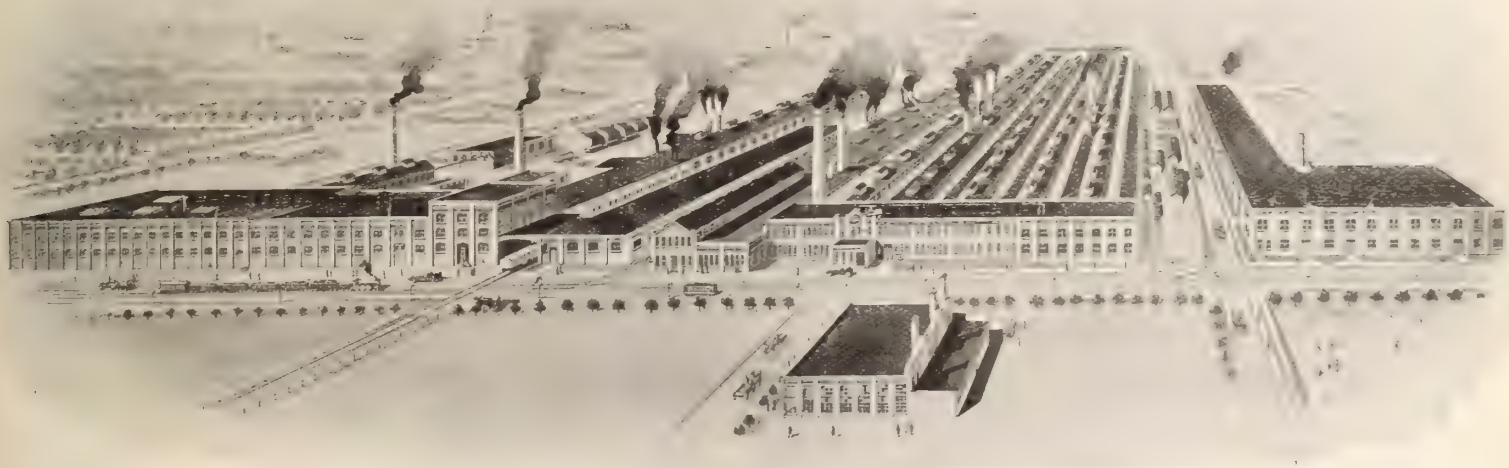

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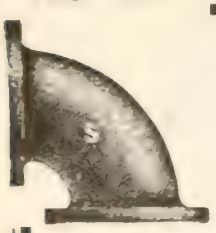

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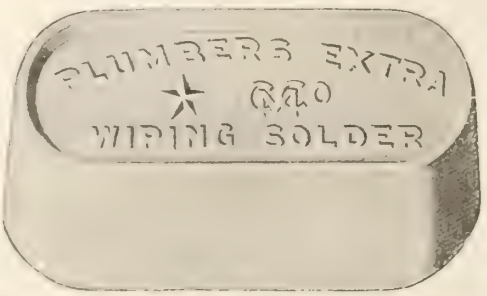

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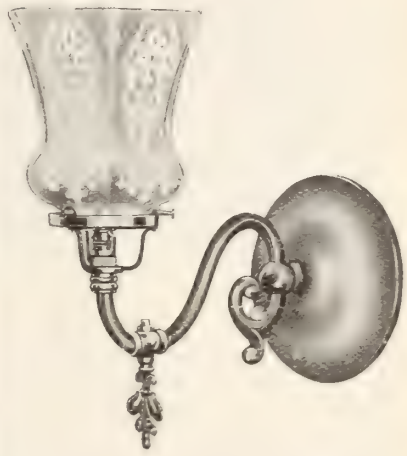

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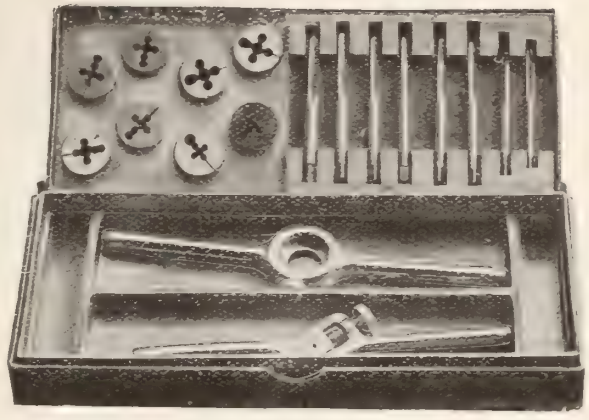

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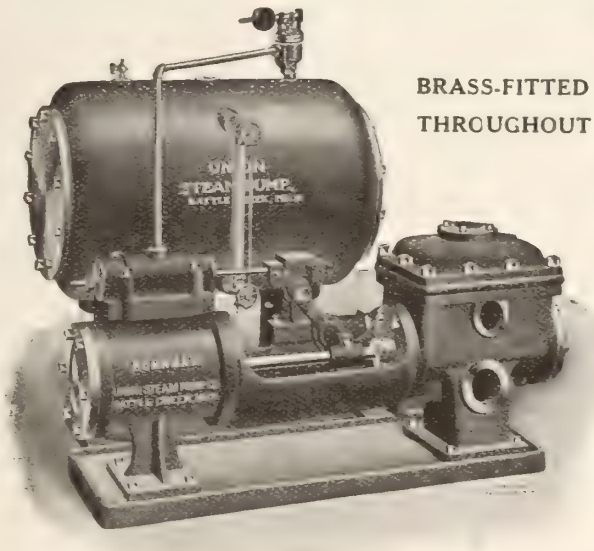

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TORONTO, NOVEMBER 15, 1910

PRIVY COUNCIL DECIDES IMPORTANT POINT.

Nearly two years ago the Standard Sanitary Mfg. Co., Pittsburg, entered suit against the Standard Ideal Co., Port Hope, claiming that the use of the word "Standard" by the latter company was an infringement upon their right to a common word which they had made a trade name by long usage. The case was tried before the Court of Kings Bench, at Montreal, and an injunction was issued restraining the Standard Ideal Company from using the word "standard" on the labels and in the trade mark attached to their goods. The case was appealed, however, by the Canadian company, and taken to the Privy Council, where it has been awaiting a hearing for a year or more.

A cablegram received last week made the brief announcement that the Privy Council had reversed the decision of the Montreal court and dissolved the injunction against the Standard Ideal Company. While the text of the judgment has not yet been received by the companies concerned, and the Standard Sanitary Co. has received no confirmation of the cablegram, it can be taken for granted that the decision is favorable to the Port Hope company.

The arrival of the text of the decision is being awaited with interest by all in the trade, as it will have an important bearing upon the use of common words as trade terms and the decision will be widely quoted in cases arising in the future over the exclusive right to use certain words as trade marks.

Since the action was instituted the Standard Sanitary Co. have taken over the plumbing supply business of Somerville, Limited, Toronto, and a large enamelware plant has also been erected at Toronto, which will be in operation next month.

"All the harm that can be done by the use of the word "standard" by the Port Hope company has already been accomplished. We are now established over here with a large plant and supply house and our goods are so well known that the decision, even if it is against us, will not cause any further injury," said a representative of the Standard Sanitary Co. to The Plumber and Steamfitter.

Whether the matter will be allowed to rest or whether the Standard Ideal Co. will enter a counter action for damages is a matter which cannot be decided upon until after the real meaning of the decision is made known.

MORE TALK OF HEATING MERGER.

A meeting of heating manufacturers was held at Montreal a few days ago to discuss the formation of a company to consolidate the various boiler and radiator manufacturers in Canada, but in the absence of two or three of those most largely interested in the industry nothing was accomplished. Offers have been made for several plants by the representatives of American capitalists, who are promoting the merger idea, but it is the general opinion that unless the promoters secure the approval of the biggest men in the trade and present a proposition based on the larger plants coming in nothing will result from the merger talk.

A SUBTLE FORM OF DISHONESTY.

From time to time there is in evidence a peculiar form of dishonesty which is the more dangerous in that it does not involve an indictable offence. This particular breach of probity consists in accepting a salary for filling one position while surreptitiously using a part of the time which should be devoted to the interests of the one employer to do work for and receive payment from another. A case in point is brought to mind by the newspaper notices respecting the firm of C. D. Sheldon. This man was accustomed to employ as stool-pigeons, men in responsible positions in various businesses, from government departmental employes in Ottawa, it is said, to men in financial institutions in various financial centres. It is entirely unnecessary to comment upon the ethics of the tempter. The serious question is with respect to the lack of business honor which permits a man to sell his whole time to an employer, accepting a substantial yearly salary for same and then to steal part of this time for the purpose of increasing his income.

Where a man can, without lessening his value to his employer, devote his evenings to extra work, one cannot take exception to this method. The point in question involves a form of dishonesty which is often practiced by men whose integrity so far as actual cash or even finer points of honesty are concerned, is unexceptional. Cases of this sort come up more often than is generally

realized and it is indeed time that steps were taken to protect an employer against petty and sometimes serious thefts of this sort, as against the more overt forms which involve the actual handling of cash. The government at Ottawa is endeavoring to prevent it, but the law is not yet of sufficient breadth to cover the ground.

A divided attention means lessened power of concentration and the opportunities of taking off a few minutes, or hours, of course increases with the responsibility of an employe's position. Should a man realize that by thus dividing his time and attention he is seriously lessening his earning power and consequently his value to his employer, selfish reasons alone would doubtless prevent much of such action.

NATIONAL IMPORTANCE OF PUBLIC HEALTH.

The fundamental importance of the subject of public health to our national civilization and industrial efficiency was concisely expressed by the Chairman of the Commission of Conservation in his inaugural address before the first annual meeting of the commission. In this connection, Mr. Sifton said in part: "The physical strength of the people is the resource from which all others derive value. Extreme and scrupulous regard for the lives and health of the population may be taken as the best criterion of the degree of real civilization and refinement to which a country has attained. It cannot be said that it has received too much attention, though the provinces, the Dominion, and the municipalities have health laws and health administrations all doing effective and useful work. There are, however, many branches of the subject, general in their character, which merit attention. The Dominion spends hundreds of thousands of dollars in eradicating the diseases of animals, and the work, it is pleasing to know, is being done with thoroughness. But no similar effect is made by Province or Dominion to meet the ravages of diseases among human beings, such as tuberculosis."

That there is a great work to be done in checking the inroads of tuberculosis is evidenced by the mortality statistics of the last census. In the census year there were 9,709 deaths from the disease in Canada. Or, in other words, twelve deaths out of every hundred in that year were due to tuberculosis. And yet tuberculosis is classed by modern medical science as a preventable disease.

OFFICIAL NEWS

N. A. M. P. & S. F. of CANADA

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Next National Convention will be held at Port Arthur and Fort William about June 1, 1911.

THANKSGIVING DAY MEETING.

A meeting of Ontario master plumbers was held in the R.M.A. rooms, Toronto, on Thanksgiving Day, to consider the formation of a provincial association. The attendance was not as large as had been hoped for, owing to the fact that the date for the meeting had been set during the busy season of the year, and the delay in getting out the information compiled by officers of the Retail Merchants' Association relative to the privileges granted to organized tradesmen under their new charter.

The meeting proved a valuable one inasmuch as it was decided to call a convention of the master plumbers on Good Friday to complete the organization of a provincial association, and plans were formulated to properly prepare for this gathering. It was quite apparent that in order to insure a sufficiently representative attendance, a systematic plan of action would have to be devised and faithfully adhered to. The subject of the convention must be kept prominently before the attention of the master plumbers from now until Good Friday, and to effect this purpose, the plans were mapped out at the meeting on Thanksgiving Day. The province was divided into districts and each district was assigned to one of the willing workers. It will be each man's duty to see that the plumbers in his territory are kept in touch with the matter and urged to attend the convention. It is felt that only by personal effort can the best results be obtained. In addition to this, the booklets containing the information prepared re the R. M. A. charter will be sent out shortly, followed by a second issue of the same material about two weeks before Good Friday, the object of the second issue being to make sure that each master plumber secures and reads the pamphlet. It is felt that by following out this programme, a large gathering of plumbers will be brought to the convention.

PROGRESS BEING MADE IN TORONTO.

On Friday, Nov. 12, 1909, the master Plumbers of Toronto organized an association with sixteen members. A year has since passed and the membership is now 103 with every prospect of continued growth. The rapid strides made show an awakening sense of appreciation of the advantages of organization and reflect a great deal of credit on the officers. When it is considered that, prior to the past year, all attempts at re-organization of the master plumbers proved futile, the merit of the work done during the past year will be fully appreciated.

In union there is strength. More and more, as time passes, is this truth demonstrated. The master plumbers find that by joining together for consultation and mutual assistance, they are rapidly widening their scope and influence. By junction of forces it is found possible to effect measures of reform and remove evils under which the master plumber as an individual has long suffered. The future, however, holds forth greater promise of improved conditions, provided the efforts of the past year are persevered in.

One of the greatest advantages of affiliation among the members of the trade is the opportunity presented for mutual assistance and advice. It is possible to meet others on an equal footing, discuss trade problems with them, air grievances, ask advice and render any assistance for which occasion may arise. If one master plumber has an employe idle, he can by this means find another man who would gladly use him for a time. By means of this system it should be possible for plumbers to fill vacancies on their staff at short notice and likewise to place their men during slack spells. Greatest of all, however, is the advantage presented of getting to know the other men, with the improved relations that such acquaintanceship is bound to bring. That much of the present more or less bitter competition, with its obviously detrimental effects, would be done away if the master plumbers became better known to each other, is a result that could confidently be expected.

Display Rooms of an Enterprising Vancouver Firm

Barr & Anderson, Who Established Their Business Only Thirteen Years Ago, Now Have Over 150 Employes on Their Payroll—Use a Five Story and Basement Building for Their Business—Recently Refused $100,000 for It—Probably The Most Expensive Property Used by a Plumbing Firm in Canada.

If a plumbing and heating firm rents or owns a shop on a good business street he should endeavor to get the most he can out of the money he is investing. He has to pay more frontage taxes on a good location than on a poor one, so he should try and get this money back—with enough extra to make his investment profitable.

Nothing so tends to advertise a firm and give it a reputation for progressiveness as good window displays and an attractive interior display. A slovenly dresser or a sloppy workman is not remembered favorably when a job of plumbing or heating is to be given out, and a sloppy looking shop and dirty window cannot be expected to draw trade.

A good example of how a firm can succeed by means of a good display of enamelware, brass goods, mirrors, etc., in the window and display room is that of Barr & Anderson, Vancouver. The editor of The Plumber & Steamfitter remembers their shop of about eight years ago, when the firm had been in business about five years. It was a small, but neat, two story building, typical of hundreds of plumbing shops, but in its attractive window and showroom it was so far above the average that it was more easy to remember than to forget. Now, after thirteen years of business life, the firm owns and occupies a building having five stories and basement, for which they recently refused $100,000, it being located on Hastings street, the principal business street of the city. If any plumbing firm in Canada occupies a more valuable piece of property, or can show a finer display in their showroom, The Plumber & Steamfitter will be glad to send its photographer and reproduce the pictures in another issue.

Displays of high class fixtures, such as are shown in the views published of Barr & Anderson's display room, are not only calculated to make the firm known and remembered when work is to be figured upon, but also to create a desire for better fixtures—and the creation of a desire is the first step toward making a sale.

In showing such a large range of tubs, lavatories and closets, Barr & Anderson are able to put themselves in a class practically without competition. A customer who has seen a $30 or $40 closet or bathtub in another shop can be shown the same fixture by Barr & Anderson, but it looks cheap beside the $50 to $100 fixtures on display, and the chances are that when the order is given it will be for one of the better fixtures which Barr & Anderson could show, fitted up with the required brasswork, whereas the competing firm could merely show a picture of the goods. And as there is no incentive to price cutting, Barr & Anderson really can get a better price for their work than the smaller firms, and consequently no objection can be raised to a firm which gets business by progressiveness rather than price cutting.

In Barr & Anderson's display, too, the display room is well lighted, and the fixtures, show cases and mirrors are

spotlessly clean. Everything is favorable to a good impression, and even after the shop is closed at night the interest of passers-by will be excited by such a bright display in a well lighted shop. The streets are not crowded in the evening, and people have more leisure to look at displays. Consequently it is a good investment to leave the shop lit up until 10.30 or 11 o'clock.

Many plumbers are interested in old pan closets, and other curiosities taken from old buildings, and, thinking others will also be interested, they put the relic of by-gone days in the window or leave it in the shop. Unless such a fixture is shown alongside a modern closet, and a placard is used to draw attention to the wonderful progress in sanitary science during the past 20 or 25 years, it is folly to show the old fixture at all, showing only the goods it is desired to sell, and on which a profit can be made.

Space given to a cabinet of bathroom fittings, and to shower baths, medicine cases, mirrors, etc., will help to make the display complete, while also helping to increase the returns on the money invested in the goods in the show room. Wherever possible, also, a model bathroom should be fitted up, and the fixtures shown in actual operation, the floor being covered with tile or linoleum, and the wall with painted burlap or some similar material. Towel racks, soap dishes, cup and toothbrush holders, etc., will also help to make the model outfit complete.

The nearer the plumber can get to showing fixtures as they will appear when actually installed, and the farther away he can get from the necessity of merely showing a picture of each individual fixture in a catalogue, the greater profit will he be able to make on the business he does.

"Will a display pay?" asks the skeptical plumber, who has been used to doing business from a cellar or a shop on a back street. Scores of firms, like Barr & Anderson, reply that it does pay, architects making a practice of bringing customers to the best kept show rooms to assist in selecting the fixtures desired. Well-to-do people who build their own homes, and parties who buy old residences and renovate them, are also frequently secured as customers as a result of having attractive show rooms.

George E. Griffith, formerly secretary of the Vancouver Master Plumbers' Association, who was thoughtful enough to forward the accompanying photographs to The Plumber & Steamfitter, reports that Barr & Anderson now have over 150 employes on their weekly payroll, and have over $50.000 worth of sprinkler work on hand, including a $25,000 contract for the British Canadian Lumber Company's mills at Vancouver. Besides this they have the following large plumbing jobs in course of installation:

Hollywood Apartments, 375 fixtures in 85 suites of rooms in a seven storey building; Granville Land and Loan Building, a seven storey block, with 350 fixtures; Lightheart Apartment building, 200 fixtures in 45 suites on six stories, and the Hunt Block, a five storey building of stores and apartments. They have also the following large heating contracts on hand: Metropolitan Building, 10 stories; Holden Building, 10 stories; Spencer Building, 9 stories; Hunt Building, 5 stories; and the Vancouver Court House.

Barr & Anderson are the British Columbia Agents for the International Automatic Sprinkler Equipment Company, The Vacuum Engineering Company of New York (makers of the Rotrex system of Vacuum cleaning), and A. B. Sands & Sons Marine Plumbing, New York.

Show Room, Office and Shop of Barr & Anderson, Vancouver, B. C.

The Plumbing Business

As long as the plumber clings to his traps, tubs, pipes and wrenches with a mind rising no higher than the mechanical details of his trade, he will be merely a "plumber." This series of articles will deal more particularly with the business end and readers should derive benefit from reading them.

Written for the Plumber and Steamfitter by Charles H. Denison.

Chapter VIII.

It matters not whether you live in a country town where the "hayseeds" blow down the main "pike," or are located along the "avenoo" in one of the large cities, the same thing applies, and that is tact. It is worked differently in many cases. The master must have the ability to read and to judge human nature, and furthermore, he must be able to apply what he knows to the right party at the proper moment.

There seems to be a lack of anything that is definite to lay hold of in the way of information along the selling line as regards our business. Perhaps those who have had some success in this respect are afraid that if they come across with any information that their "goat" will be got forthwith. I wonder if it ever occurred to them that, for every idea that they gave up, about ten came back in the line of different suggestions the way somebody else saw the same matter.

We don't all see things from the same angle, and so I claim that a man is not only extremely foolish to try and keep his knowledge bottled up, but he works harm directly to himself. Now for the benefit of those who may not have gone into this subject as deeply as others (or maybe "they have not the time" to read about it) and also to bring up the subject for debate, I am going to try to give a little fuller sample of the manner of going at such matters than I have seen for some little time.

I do not consider it perfect. If you, my friend can better it, or pick it all to pieces, I would be pleased to have you do so. We learn by correcting the mistakes that we make. Everybody sins in this respect. The thing to do is to see to it that we do not make the same mistake the second time.

Try to Create Business.

We will suppose that you are a master plumber or fitter, and are located in a country town or a small city that is wearing long pants for the first time in its history.

Business is "slack." Many times it is in just such places for about six out of the twelve months in the year. The question is, what are you going to do about it?

There is but one common sense answer, and that is, create new business. At the very first deal of the cards the plumber draws a pair of "bullets," and here they are: 1 the country trade; 2 specialties.

Now if you have held back for years, refusing to consider the farmer other than a mossback, I want to ask you a fair question. Did you ever take a day off and go out in the country and try to land one? If not let us get at it right now before we get a day older.

If your own horse and waggon are not quite up to snuff, why hire a livery, and start out on a day when the weather is pleasant. It would be well to have in your mind two or three good reliable farmers whom you can see on this trip, for some of them might not be at home when you first call. We will say that you have driven several miles, gotten the cool refreshing morning's air, and incidentally boosted up your nerve, and are now arriving at the prospect's place of residence.

Use Tact in Conversation.

"Hitch" and go in. There is a whole lot in getting started right, and if men happen to be your strong point, why you will tackle the man of the house first. Women were always my long suit though, so I generally made it a point to get the lady interested first. Don't make a mistake and tell them (or her) that you have come to sell a heating plant the first blamed move that you make. It's a clear case of down and out if you do. Gossip with them for a while. The weather, the crops, the airships, oh, there are about 1,000 thing that you can talk about, if you will.

Perhaps you have heard that the lady has some fine butter to sell, and you want to take a crock home with you. Well, it is not a hard matter then to switch the conversation to actual every-day living, and ascertain how they are enjoying life—especially the winters. Now you have got a key note to go on, and be sure to play it for all it is worth, but with "tact" meanwhile.

You have got a look in for a job now if you handle the thing right. Should there chance to be any invalids, sickly children, old people subject to rheumatism, in the family, your case is just that much stronger, and you may consider yourself lucky.

Cultivate the Women Folk.

You can gamble that these people do not enjoy life. No modern conveniences and only one or two stoves in the winter time, how can they? You must not, however, dwell too long nor too hard upon this part of the subject. They will get sore if you do. The better way to do it is to paint up the real comforts of steam heat, the conveniences of a bath room and an up-to-date kitchen. Better sort of drop the old man at this place, and give your full attention to the women folks. A good time right here to spring some of your books containing pictures of different jobs and the fixtures. Now let the conversation show them that they, having ample means, can't afford to get along without these conveniences of the life as it is lived to-day, and that the investment will pay them more in actual comfort than any money they ever spent before in their lives.

If you present this view of the matter with sufficient tact, the wife will soon come to the conclusion that she has not received a square deal in the game. She knows, the farmer knows, and you know it too, that the men have nearly all of the latest and best machinery that is to be purchased to help them in their work.

Why should she be expected to make brick without straw? All the same, don't you notice, too plainly, that there is any division in the family. Let the idea soak in and work for a while. Now you can turn too, and go after the farmer for a while. Show him what can be done with a waterworks air pressure system. The tank in the cellar out of the way and safe from a freeze up. He can then have all the benefits that any regular waterworks system has. Dwell on the fire protection. These folks need a little education on such subjects. In

spite of all the advertising that has been done, you will be surprised to find out how many there are in this world who are comparatively ignorant upon these matters.

Business Will Come Later.

Do not understand me as saying that you are going home with the order for a job right in your pocket at the first attempt. If you could land the contracts like that, you would be worth about $1,000,000 a year to some enterprising firm, and go at the matter along big lines.

You can wager, however, that you have very much interested these people, put them to thinking, and the chances are that they will soon be asking themselves, "Why shouldn't we have these things?" Then you have got them going, and the fault will be entirely your own if you allow them to get past you without landing the job.

The farmers are more easily satisfied than the general run of city folks in work of this kind, and at the same time they want good goods, and are willing to pay for them. I have observed masters who put off poor articles on the farmer, but it is a big mistake, and any master who does it is a sucker who can't see farther than the end of his nose.

I had intended to say something about specialties in this article, but the farmer got me interested, and so I will have to put the matter over until the next chapter, in which, also, I will have something to say about the city salesman.

Expansion of Steam or Hot Water Pipes

John F. Bennett, in the Plumbers' Trade Journal, Discusses the Various Methods of Providing for Expansion in Risers of Heating Plants.

In heating by either steam or water it is interesting to note the various methods of providing for expansion, especially on risers. Some of the vagaries of fitters or designers of heating plants are really ludicrous.

The writer knows of a ten-story building in which each riser has a slip expansion joint between the fifth and sixth floors. (See Fig. 1.) Above and below, on each floor, the radiators are connected by what is known as a rigid connection—that is, a nipple from a tee in the riser, with an elbow looking up, to which is connected the nipple to which the radiator valve is attached. This makes pretty nearly as rigid a connection as it is possible to construct, and the expansion joints, for all the good they do, might as well be left out. The only possible chance for taking up the expansion seems to be between the fifth and sixth-floor radiators, as what little play is on the ends—upper and lower—of the risers is inconsiderable and not worth taking into account.

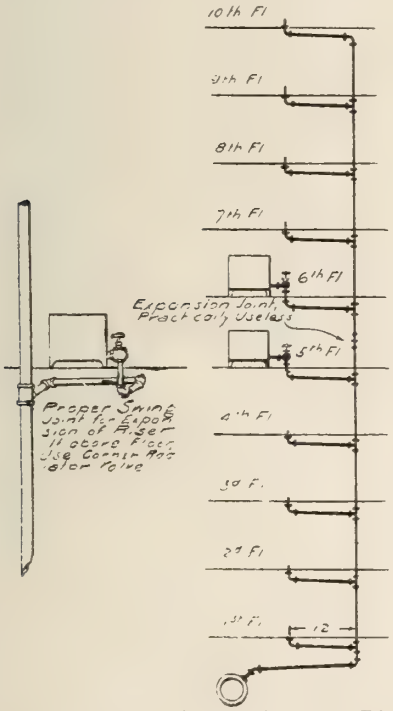


Fig. 1. — Rigid Connections on Riser, With Expansion Joint on Fifth Floor.

On another building a swing-joint is provided for on the radiator branches on the different floors. This would be pretty good if freedom of movement had been provided for. Unfortunately, however, the floors were of cement construction, in which the branches were imbedded, thus rendering them as solid and immovable as the famous Rock of Gibraltar.

While exposed or open connections are always most advisable they are not always most desirable from the owner's standpoint. Some people have a horror of exposed pipes showing in a room. Still, taking everything but "looks" into consideration, exposed work is always the best, on account of being open to observation, as well as being readily accessible in case repairs are necessary.

Where floors are of tile or cement construction up-to-date architects now provide pipe trenches in the floors, covered with iron plates in which the branches are run. Those trenches are deep enough to permit of any movement of the pipes likely to be caused by the expansion or the contraction of the risers.

In residences not exceeding two or three stories in height the expansion problem, as relating to risers, is easily solved. A rigid connection on the second floor, and a swing or a spring connection, on the first and third floors, will take care of the expansion, allowing the riser to expand at both ends upwards and downwards.

In higher buildings, however, some sensible provision for expansion must be made in order to avoid straining the

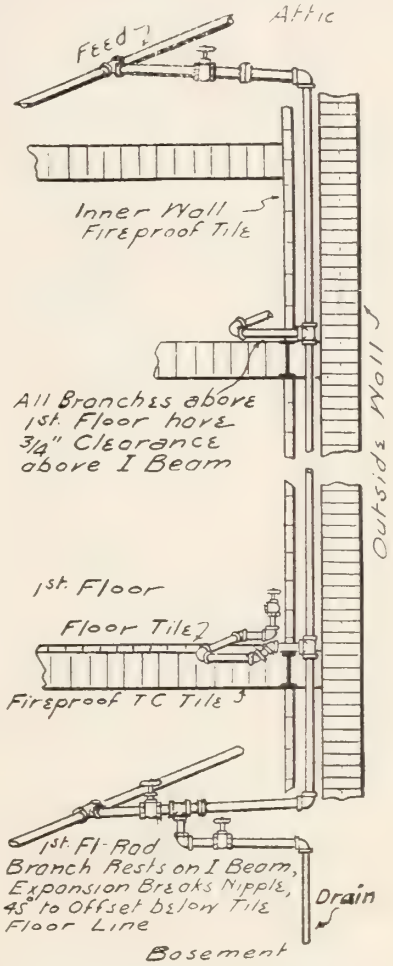

Attic
Feed
Inner Wall Fireproof Tile
All Branches above 1st. Floor have 3/4" Clearance above I Beam
Outside Wall
1st. Floor
Floor Tile
Fireproof TC Tile
1st Fl. Rod Branch Rests on I Beam, Expansion Breaks Nipple, 45° to Offset below Tile Floor Line
Drain
Basement

Fig. 2.—Branches Taken From Concealed Risers on Overhead System.

branch connections and tipping or tilting the radiators. On one pipe work if rigid connections are made, such as are shown in Fig. 1, a radiator may be raised by expansion a half inch or more from the floor at the end where the connection is made. This, naturally, forms a trap for the condensation with resultant water hammer. If the expansion is downward the radiator, not being able to go through the floor, it is apparent that a serious strain comes on the branch. Sometimes — several times, in the observation of the writer—branches have been broken clear off from the tees in the riser.

A case in point. On a six-story building heated by an overhead system of hot

(Continued on page 15).

Floor Connections for Closets and Slop Sinks

Address by J. J. Cosgrove Before the American Society of Inspectors of Plumbing and Sanitary Engineers—Advantages of Flexible Joints Outlined.

In a paper read by Mr. J. S. Cassidy, Inspector of Plumbing, Winchester, Cambridge, Mass., at a recent meeting of the Society, he said :

"It is curious to consider that most codes forbid the use of unions or slip joints on the sewer side of traps, and then allow the inconsistency of permitting a putty joint—and in the final analysis that is what you get—under closets, especially in localities where a fixture test is not given. This brings us to the consideration of the question: 'Has the time arrived when we may in-

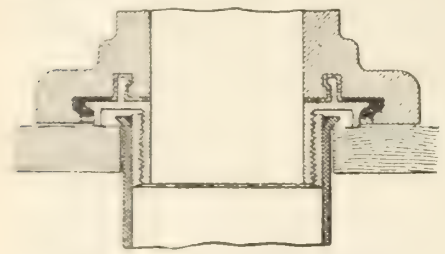


Fig. 1.—Mott Screw Flange.

sist that all water closets shall have their connection under seal?' I think so."

When Mr. Cassidy called the attention of the Society to the use of putty, rubber and other objectionable materials for making joints between water closet, or slop-sink outlets, and the drainage system, he pointed out the one weak surviving relic of the day, when, on account of the extent to which putty was used, the craft well deserved the name of "putty plumbers." Most of the members here assembled can recall

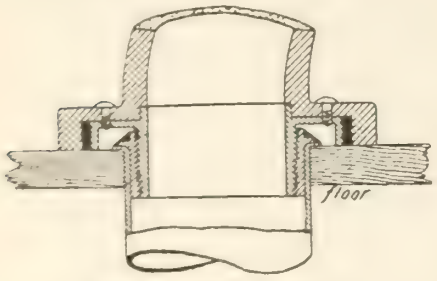


Fig. 2.—Screw Connection.

the time when joints in soil pipe, which were more or less inaccessible for pouring and calking, were made with putty. That, however, always was an illegitimate use of the material, never sanctioned by the better class of the trade, and thanks to suitable laws and efficient inspectors, the putty joint in soil pipe is a thing of the past. But the prohibition of putty in soil pipe hubs did not legislate out of existence the putty joint, for there still remained three places in plumbing systems where the use of putty received official sanction and the stamp of approval. Those three places were : where common-overflow wash basis were connected to waste pipes ; at the collar of sinks, and at the floor connection of water closets and slop sinks. The first two, the connections of lavatories and sinks, were not objectionable from sanitary reasons, for the putty joints were on the fixture side of the traps and protected by the water seals. Nevertheless, improvements in lavatory connections were made and adopted by the trade immediately, the old putty joint at this point being prohibited ; and the use of porcelain sinks and porcelain enameled sinks with improved waste connections has given the finishing stroke to the putty joint at the sink collars.

The Old Putty Joint.

That the putty joint was on the fixture side of the trap was true, likewise, of early pan and other forms of closets which had traps under the floor, and at that time the putty joint under closets was not objectionable from a sanitary point of view ; but, improvements were made in the form and material of closets and without attention being called to the matter or thought being given to the subject, the putty joint was shifted from the protected to the exposed side of the water seal. From a mere unsatisfactory and objectionable botch, from a workmanship standpoint, it becomes a sanitary nuisance which should never have been permitted. Custom alone, which had sanctioned the original protected putty joint, accepted this new one without noticing that conditions had been changed by moving the trap to above the floor, thereby bringing the putty joint on the sewer side of the seal. Up to the present time there was some shadow of excuse for tolerating these unsanitary and unworkmanlike makeshifts, the putty and gasket joints, for no satisfactory closet connection had been put on the market and placed within the reach of all manufacturers. It is not sufficient that there be a suitable floor connection on the market if that connection is confined to one line of goods. To insist on its use under such conditions would create a monopoly and that would be opposed to public policy.

As the matter now stands, however, there are several good, workmanlike, flexible, metal-to-metal connections, most of which can be had on any combination or make of closet. A few flanges are confined to the owner's own line of goods, but the rest are in competition with one another, and can be had by any responsible manufacturer of closets to use with his closets and slop sinks. That being true, there is no longer any reason why the various health boards of the different cities should not prohibit putty and gasket joints, and insist that all water closets and slop sinks be fitted with flexible, metal-to-metal floor flanges or waste

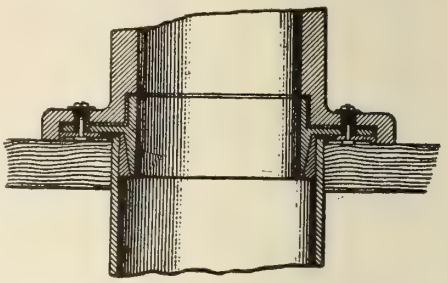


Fig. 3.—Foulois Push Nipple Joint.

connections. To do so it would hardly seem necessary to revise the several codes, for most of them now prohibit the use of putty and gasket joints in the drainage system. Heretofore, owing to the lack of suitable floor flanges, the putty and gasket joints have been tolerated, but it would seem as though all that would be necessary is a ruling from the various departments to the effect that after a certain period from that date putty and gasket joints would

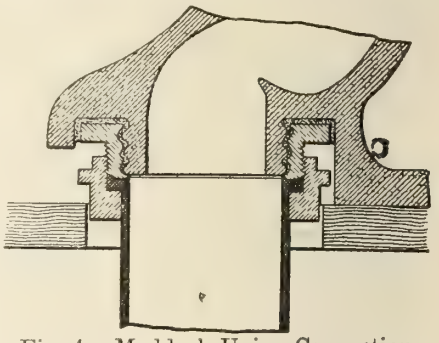


Fig. 4.—Maddock Union Connection.

not be allowed under closets or slop sinks.

Gasket Joints on Soil Pipes.

So far, the objection to the use of putty joints is obvious, but the question might logically be raised, "If gasket joints are found satisfactory for use in steam and water mains, why are they not equally satisfactory for soil-pipes?" The question is not so logical, however, as it might appear. Gaskets of whatever kind are perishable, and while perhaps perfectly tight when new,

they soon deteriorate in a drainage system and are destroyed. Paper, paperboard, mineral fibre, or cloth and rubber, each or any makes a perfectly good gasket for use in steam or water unions, for the temperature of steam is such that no destroying bacteria can live within the pipes to break down the washers, and by keeping the gaskets always wet in a water pipe the water protects them from being destroyed, for just as wooden piles which are kept under water will last indefinitely, so will gaskets in water last indefinitely; and just as wooden piles alternately wetted and dried or kept in a moist, warm atmosphere, such as will be found in the interior of a soil pipe, will sooner or later disintegrate, so will the gaskets inside of a drainage system soon cease to perform their functions. Throw a piece of rubber packing, leather, or composition of any kind on the ground where it is moist and warm, and see how long it will last; or suspend a piece in a sewer or soil pipe, and see how soon it will be destroyed.

Paper and rags, which in a steam pipe or pure water pipe would last indefinitely, would be worthless inside of a few weeks if placed in a sewer or soil pipe. That statement is proved by some experiments conducted by the State Board of Health of Massachusetts at Lawrence, to determine the length of time required to break down materials of that character. A considerable quantity of newspaper, cotton and woolen cloth, contained in a wire basket was placed in a septic tank and allowed to remain there for one month and twenty-seven days, from October 4th to December 31st, 1900. When taken out, the cloth and papers were still intact, but so rotten that they fell to pieces when touched. The rotting fibre in that manner, when exposed to sewage, is what should be expected, for sewage contains within itself the means of its own destruction, and no more favorable place of incubation for the reducing bacteria could be found than in the chinks and crannies of soil pipe fittings, where the warm most atmosphere is ideal for the purpose.

There is another reason why gaskets are permissible in steam and water piping, while objectionable in soil-pipe work. If there is a leak in a steam or water pipe, there is visible evidence of the leak in the steam or water escaping; and as either would be a source of expense as well as a nuisance, immediate steps could be taken to repair the leak. If a gasket under a water closet is not tight, on the other hand, there is no visible evidence of the insidious, enervating air escaping, and as no danger signals are displayed, nobody is aware of the danger, so repairs are not made. Gaskets might be perfectly tight when first put in, and may last a few years before rotting; but, in a system

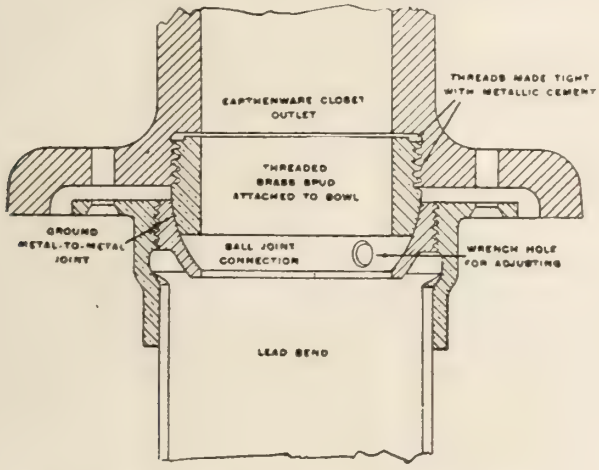


Fig. 5.—Ball Joint Adjustable Closet Flange.

of house drainage, which is never tested after being passed by the plumbing department, everything entering into the system should be made as near everlasting as possible, and this can be done only by requiring metal-to-metal closet floor connections.

In order that sufficient data will be available for any department contemplating a revision of its code requiring flexible metal-to-metal closet and slop-sink connections, or any other action having the same end in view, I have gathered together in this paper descriptions and illustrations of several closet connections now on the market. This number will, no doubt, be added to from time to time, as demand for a flexible metal-to-metal floor connection stimulates inventive imagination.

Screw Flange Connection.

In Fig. 1 is shown the Mott screw flange, which is an example of this type of connection. This flange provides an all metal-to-metal closet floor connection, which is made up with a screw joint. The manner of connecting the metal to earthenware, and the way the closet is connected to the drainage system are so clearly shown in the drawing that nothing more need be said about this type of floor flange. It might be well to remark, however, that in addition to the Mott flange, there is another similar screw connection, shown in Fig. 2, on the market, the manufacturer of which I am unable to locate, so cannot give his name.

There are two closet floor flanges, known, respectively, as the Stallings flange and the Foulois connection, each of which depends for its seal on a ground, tapered surface similar to the push nipple for a radiator. An illustration of the Foulois flange which represents this type of connection is shown in Fig. 3. The tapered ground-surface method of forming a joint is too well known to the trade to require further mention. Everybody is familiar with the push-nipple joint.

In the Maddock closet floor flanges, Fig. 4, we have the union principle applied to the closet flange. This is a threaded connection, the parts of which are drawn together, the same as is a union joint, by means of a threaded ring connected to the lower member of the coupling.

Ball-Joint Adjustable Closet Flange.

In the Standard Sanitary Mfg. Co.'s floor connection, Fig. 5, we have a floor flange, built on the well-known ball-and-socket principle, which permits of adjustment should the parts be out of alignment or a settlement of the floor occur. This connection is further provided with a vertically adjustable seat to compensate for variations in the closet bases or floor flange.

The objection has been raised in the past to the screw-thread connections, push-nipple connections, and coupling

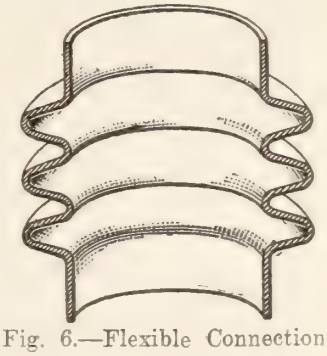


Fig. 6.—Flexible Connection.

connections that they are perfectly rigid, lack flexibility, and in case of a shrinkage of floors, or a settlement of the floors or stacks, would not give or adjust themselves to the new condition of affairs. Such criticisms have been well founded heretofore, and if there were no means of overcoming these ob-

jections the floor flanges would be found wanting. Fortunately, however, when a closet floor flange of any type is used in connection with the flexible connection shown in Fig. 6, it possesses every quality of adjustability and flexibility that could be desired. In the case of the push-nipple connections, which have no means for vertically adjusting the parts, the folds of the flexible connection will widen out under the pull of the closet bolts, thus bringing the tapered parts to a good metal-to-metal bearing. Further, when used with any kind of flange whatsoever, in case of a shrinkage or settlement of the floors, instead of holding the closet rigidly in place, with a crevice between the closet base and the floor, the folds of the connection will be pressed together by the weight of the fixture when in use, and the closet base will be pushed firmly down on the floor, without damage to the fixture, or straining of any of the parts. On the other hand, should the stacks settle, the folds of the flexible connection will open out, thereby compensating for the settlement; or, should the stacks or branches be forced to one side, the convolutions

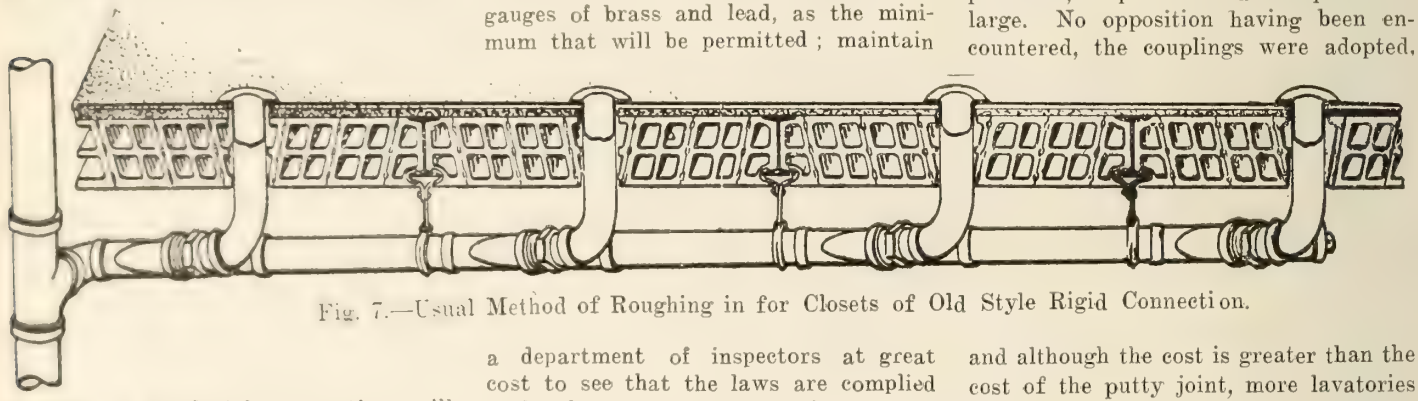


Fig. 7.—Usual Method of Roughing in for Closets of Old Style Rigid Connection.

or folds of the flexible connection will expand on one side and contract on the other, without straining any of the parts. It will be seen, therefore, that using this flexible connection with any of the types of metal-to-metal floor connections illustrated, will provide a flexible, adjustable metal-to-metal coupling that leaves nothing to be desired. This flexible member can be had made in lead in the form of straight pieces or bends, or it may be had in soft copper, either straight or bent, with threaded ends for use in wrought pipe drainage systems.

It might not be out of place here to call attention to the improved method of connecting metal to earthenware shown in the Standard ball-joint closet floor flange. This connection consists simply of a threaded outlet passage in the earthenware of the closet which is made perfectly and permanently tight by screwing into it a threaded nipple. This form of connection can be used with any type of floor flange made and in connection with any manufacturer's line of goods, by securing permission from the Standard Sanitary Mfg. Co., a fact worth knowing, as architects might often object to a connection for no other reason than the manner in which it is secured to the earthenware bowl.

A feature of the closet floor flange business which is worth calling to your attention, is the generosity of manufacturers in permitting their floor flanges to be used by other manufacturers in connection with their line of goods. Generally, the practice has obtained among manufacturers, when they have a good patent, to confine the article to their own combinations. In the case of closet floor connections, however, as before mentioned, with the exception of a few manufacturers, all the other owners of patents are licensing competing firms to use their flanges.

Back Venting Condemned.

As was pointed out by Mr. Cassidy a year ago, it seems like a travesty on plumbing practice to require an expensive system of back venting; insist on the use of extra heavy or extra strong soil pipe; specify full weight, and heavy gauges of brass and lead, as the minimum that will be permitted; maintain a department of inspectors at great cost to see that the laws are complied with, then permit a putty joint to be used at a point where, on account of its size and the jars the fixture receives, it negatives the good result expected of plumbing laws and plumbing inspection. The joints might be tight when first put in and the putty is in a plastic condition, but as soon as the oil dries out and the closet receives a jar, the seal is broken at that point. While on this subject it might be of interest to those who have never been called upon to smoke-test old installations to cite the opinion of Mr. A. A. DuMond, an authority on smoke testing, who has devoted several years to this branch of plumbing. According to this authority, "Not over 15 per cent. of old plumbing installations, taking them as they run, those which were installed before with those which were completed since the adoption of plumbing laws, are in perfectly good condition. In the 85 per cent. of defective cases, 30 per cent. will be found to require slight repairs, 35 per cent. will require extensive repairs, and about 20 per cent. will be found so defective as to render the buildings unfit for habitation. Where tile pipes have been used for the house drain, without exception they will be found to leak at most of their joints; and of the 85 per cent. of buildings in which defects are found, fully 90 per cent. of them will be found defective between water closets and slop sinks and the soil pipe where the putty joints have been used.

In view of the facts set forth, it would seem that the time has arrived when it is necessary for those interested in plumbing practice to take a firm stand for the adoption of flexible metal-to-metal waste connections for all water closets and slop sinks. Of course, such a stand will meet with a certain amount of opposition, for we all dislike to be legislated into doing things, even for our own good. Had anyone suggested the compulsory use of basin couplings instead of the old putty joint, opposition would have risen on all sides to cry him down, even though the opposition knew the couplings bettered the system and were wanted by architects, plumbers, inspectors and the public at large. No opposition having been encountered, the couplings were adopted, and although the cost is greater than the cost of the putty joint, more lavatories are now made and sold than ever before; and this is due solely to the improved materials and connections, which, making them more sanitary, has opened a way for them into sleeping rooms. The architect who would specify, or the plumber who would recommend an old putty-joint connection wash basin would soon lose his trade; and what is true of the putty-joint lavatory will soon be true of the putty-joint closet and slop sink. In the meanwhile, until the merits of a metal-to-metal connection become better known, objection might be raised in some quarters on account of the increased cost. In matters affecting the public health, though, do the authorities ever hesitate on account of the cost? I believe not. At an outlay of millions and millions of dollars the larger cities construct water works, filtration plants, sewer systems and sewage purification works, to try to conserve the public health. Supplementary to these efforts the health boards insist on traps and

back vents instead of straight open pipes; fresh air inlets where running traps are used; certain standards of weights and quality for the materials used, and careful inspection, even though the approved system costs the householder more than an unsanitary one. Why, then, should the matter of a few extra dollars in the cost of the plumbing for a building cause a halt, when those few dollars strengthen the one acknowledged weak point in the entire system from housetop to sewer outlet? So far as the home owner is concerned, he would gladly pay the difference even though there were no laws to coerce him; and in the case of investment buildings, like hotels, offices and business places, there should be no hesitancy in taking the stand on account of any extra cost.

Will Not Add to Cost.

But, as a matter of fact, there will be no extra cost. If there is any difference in cost, it will doubtless be lessened by using flexible metal-to-metal connections. I am not speaking now of the saving effected annually in repairs due to breakage from settlements, but the actual saving in the cost of installation. In large buildings, many stories in height, provision must be made to prevent the shrinkage of floors, or settlement of floors or stacks, from pulling apart the branches or breaking the fixtures. When a battery of closets are connected up together, a common practice is to take off the closet branch from the stack, as shown in Fig. 7, at right angle to the line of closets, then turn with an elbow and use bends to connect the Y fittings to the closet floor flanges. This is done so there will be a certain amount of "give" should a settlement occur. But it will be observed, the materials and construction of the fittings are such that whatever "give" there is will be due to a giving, twisting or distortion of the parts, which are crushed together, pulled apart, or started in the threads, as the case may be, so that when the settlement has subsided and the pipes have become adjusted in their new position there is no knowing whether or not they are tight.

When flexible, metal-to-metal connections are used, on the other hand, as may be seen by comparing Fig. 8 with Fig. 7, sufficient materials and labor are saved to pay for the flanges, while at the same time, the system is simplified, and possesses a flexibility which permits of any reasonable settlement, shrinkage or sway without straining, crushing or otherwise affecting the piping or fixtures. Insofar then, the flexible connection not only betters the system and simplifies it, but it does so at no greater expense, if indeed it does not effect a saving.

That useless, offensive and objectionable appendage, the fresh air inlet, has been retained in practice in many localities, in spite of the cost, which is several times that of the floor flanges for an ordinary residence. Why could not the systems be bettered in every way and the cost to the household reduced by dispensing with or abolishing the fresh air inlets and requiring flexible metal-to-metal closet and slop-sink connections? A ruling to that effect certainly could find no oppenents, for by the one act the plumbing system is both bettered and cheapened.

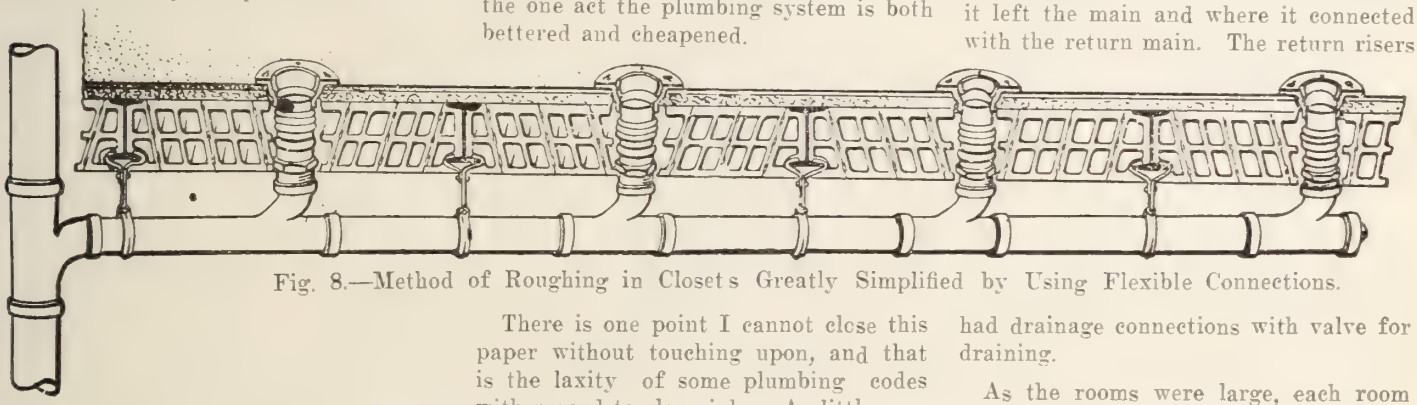


Fig. 8.—Method of Roughing in Closets Greatly Simplified by Using Flexible Connections.

There is one point I cannot close this paper without touching upon, and that is the laxity of some plumbing codes with regard to slop sinks. As little protection as the old closet flange with putty joints affords, it is better than the putty joint without the flange; yet very few codes require slop sinks to be connected up as are water closets.

This does not seem right, and if a concerted action is taken towards doing away with the putty and gasket joints in closets, it would seem inconsistent to still permit their use in connection with slop sinks. When the putty and gasket joint is driven from plumbing practice, let it be finally, and completely, without exception.

EXPANSION OF STEAM OR HOT WATER PIPES.

(Continued from page 11).

water, the branches were taken from concealed risers, as shown in Fig. 2. On each floor a swing joint, consisting of three elbows on the branch were used. This is considered to be good practice, outside of the friction caused by the elbows or 90 per cent. bends. On each floor, save the first, some clearance was allowed between the bottom of the branch and the I-beam. On the first floor it was necessary to offset by means of two 45-degree fittings and a short nipple, in order to bring the branch below the tile floor, which was laid in cement directly on top of the terra-cotta fireproof tiling. The bead of the first 45 degrees rested directly on top of the I-beam. (See A, Fig. 2.)

After three seasons' use, during which the pipe branch had been weakened by rust or corrosion, and during which time nothing unusual had developed, it was found, nearly at the end of the third winter, that the pipe broke off at the tee on the riser at the third floor. It should be stated here that it was a two-pipe system, with the feed starting downward from an overhead main in the attic, and continuing down to the feed of the last radiator at the first floor. The return started from the radiator on the top floor, and continued down to the return main in the cellars. Radiators on each floor being connected to the risers. This, too, was good practice. Each riser had a gate valve where it left the main and where it connected with the return main. The return risers had drainage connections with valve for draining.

As the rooms were large, each room averaged four radiators, so that one line of raidiators, all the way up, could be cut out without causing serious discomfort. This break at the first floor was a most difficult one to repair, necessitating the removal of the marble wainscot, and tearing up of the tile floor. Later on, investigation developed that the partition tile on each floor was fitted tightly over the branches by the tile-setter who evidently cared little and knew less about expansion. Above the first floor the floors were of wood laid on two-inch sleepers, and as the branches were one-inch there was a little freedom of movement between the floor and the I-beam, which was flush with the top of the terra-cotta tiling. The baseboards were removed and the tile chipped out for about an inch above and around the branches.

The riser was shortened up for an inch above the beam—another very difficult job, because of its inaccessibility—and no further trouble was experienced at that point. The other risers in the building gave no trouble whatever.

The Question Box

Subscribers are Urged to Send Questions to be Answered, or to Comment on Letters Published. Descriptions of Jobs Done or Shop Kinks are Also Invited.

PROTECTION FOR GAS PIPES.

Editor Plumber and Steamfitter — Should gas pipes ever be covered somewhat after the manner in which steam and hot water pipes are fixed?

Chatham, Nov. 10. G. Z.

If the gas pipes are left exposed where the weather can affect the pipes, there will be a mighty good chance for the pipes to freeze. Many people do not stop to think that there is moisture in the gas, and that it will condense, and right there you will have a freeze up in short order. Run the pipes so that they cannot freeze. If the pipes must be exposed to cold weather cover them well with hair felt, and put canvas over the felt, and we think that you will find it to meet the requirements.—D. C. H.

CLOSET STOPS UP.

Editor Plumber and Steamfitter—The other day I was called upon to fix a closet that had got stopped up. The owner had tried his luck first with a hose, and succeeded in wedging the obstruction all the tighter. I tried the plumbers' friend, but could not make it, and took the bowl down. Is there any tool that would have done the trick without taking off the bowl?

Saskatoon, Nov. 3. Curious.

A very convenient and handy tool to have around in such cases as this is what is called the spiral auger, made by the Canadian Wolverine Co., Chatham, Ont., and we believe that with this tool you would have been able to have turned the trick without going to the trouble to which you were put.—D. C. H.

THE LATRINE CLOSETS.

Editor Plumber and Steamfitter — I had somewhat of an argument a few days ago over the matter of the latrine style of closets, and did not have much material to draw on. Will you please state a few of the objections in an early issue of your paper in the questions and answers department?

Revelstoke, Nov. 1. R. S.

One objection is that the flushing is intermittent. Another is that the odors are communicated too easily to the room. Also there is a large amount of surface to be fouled. However well the apparatus may flush, it is not to be compared in efficiency with the flush of the individual closet. A common sense way of looking at this matter is, why if it is a good thing, why is it prohibited in many of the largest and most up-to-date cities? It is a hard matter to keep public toilet rooms clean, let the attendant use all the precaution that he will. Therefore we do not think it would be a wise plan to add to his misery by using any type of fixture that would involve more, or dirtier, labor.—D. C. H.

EXPANSION ON PLUMBING JOBS.

Editor Plumber and Steamfitter,—Can you inform me the best manner of providing for the expansion on plumbing jobs? I know that there is some, but I am not sure as to the best means.

S. F. R.

Quebec, October 2.

Flexible lead connections have been invented for this purpose, and the tests seem to prove that the article meets a long-felt want in the craft, as these fittings can take up the expansion to the extent of over an inch. They are patented by the Cosgrove-Cosgrove Co., of Philadelphia.—D. C. H.

TANK IN ATTIC OR CELLAR.

Editor Plumber and Steamfitter,—In reading an article in one of the papers I saw references made occasionally to "deep" and "shallow" wells. Now, this is not exactly plain to me, and I trust that you will be able to make some reference to it among the questions of your most valuable paper.

A. R. N.

Halifax, October 4.

Sometimes, when we have been looking down a well some one would exclaim, "Oh, what a deep well!" Now, the funny part of it is that the well might not (properly speaking) have been a deep well at all. If it collected any surface water which had filtered down through the earth, it would not be a true deep well. As generally understood, a deep well is one that is driven through an impervious strata of the earth. Many of these are found in the western sections of the continent, the waters from the same being used for the purpose of irrigation.—D. C. H.

GAS AS FUEL.

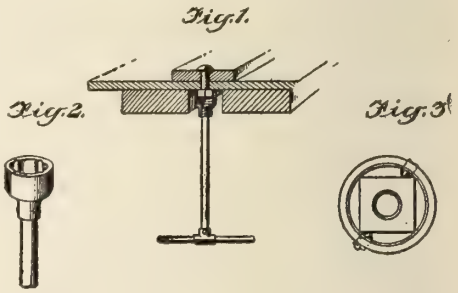
Editor Plumber and Steamfitter,—Is gas ever used for the purpose of furnishing the heat to a steam heating boiler? B. E.

St. Catharines, Oct. 21.

We are informed that it is so used in specially designed fixtures and sometimes specially designed boilers. We have, however, seen fixtures that would go on almost any old boiler and work in a satisfactory manner. In the last few years the use of gas in the place of coal has increased to a surprising extent and the wonder is that the plumber and fitter does not take advantage of this chance for extra business and work it to a greater extent than he seems to be doing. When the gas companies are approached on the subject they give out the statement that they are obliged to go into the fitting business for the reason that the plumber is so obtuse that he refuses to have much to do in handling the fixtures.—D. C. H.

IMPROVED CORNER WRENCH.

The accompanying illustration shows a convenient wrench made from pipe fittings for the purpose of tightening nuts that are inaccessible to an ordinary wrench. The wrench is made by filing four grooves within a common reducer, as shown in Fig. 2. to fit the corners of the nut. Instead of filing grooves in the



Convenient Wrench for Pipe Fittings.

reducer, studs may be screwed through the sides as shown in Fig. 3. Reducers of different size should be used to fit different nuts. A hole may be drilled through the connections, and a pin inserted to prevent them from unscrewing while the wrench is used for tightening or loosening a nut.—D. Pennington in Scientific American.

Plumbers Should Go After the Lighting Trade

Many Master Plumbers Find Gas and Electric Fixtures Profitable—When Installing the Gas Piping or Electric Wiring the Fixture Trade Should be Solicited—Line Helps in Making the Shop Attractive.

The time has arrived when the progressive plumber should add to his stock a line of electric and gas lighting fixtures. It is not only a likely means of increasing profits; it is becoming more and more a necessary feature of the plumbing business. Is it not natural, after the plumber has installed the heating plant, put in the plumbing and made the gas connections, that he should go ahead and finish the contract by installing the lighting fixtures? It is logically a legitimate branch of the plumbing trade.

The article appearing in the October 1 issue of Plumber and Steamfitter, dealing with this question, attracted considerable attention and set many members of the trade thinking. The result has been the receipt by Toronto supply houses of numerous letters of enquiry from plumbers in all parts of the province. They are asking pertinent questions as to the feasibility of taking up the line, the cost of initial stock and the likely profits. This is a healthy sign and can be accepted as the forerunner of a more or less general move in the direction recommended.

Get After the Owner.

There are many reasons why plumbers should add lighting fixtures to their stock. It falls to them in any case to make the gas connections. Why not finish the work by putting in the fixtures? The plumber has every facility for securing business, being right on the ground. If his contract for plumbing work has been carried out satisfactorily, the chances are all in favor of the owners being quite willing to have the fixture contract left in his hands. As a matter of fact, one figure could be quoted for the entire work at the outset. In approaching the owner of a new house the plumber could say to him:

"Let me figure on the plumbing, heating and installation of lighting fixtures and I will tender you one figure for the whole contract. I can offer you a slightly better figure in this way for the lighting work than you would get by going to another dealer for that alone. Besides the work will be done quicker. My men will go ahead and finish up the whole contract and you will not have to wait when we get through for the lighting man to start."

In nine cases out of ten these reasons would strike home to the owner and the whole contract would go to the plumber.

When the plumber settles down to seriously consider the proposition, the first question that arises—and the all important one—is, would this departure pay? After due consideration of the available facts the conclusion cannot be escaped that a good profit is there for the having. The margin on lighting fixtures is, of course, sufficient to pay well, if the requisite amount of business can be worked up. The plumber is, of all tradesmen, in a splendid position to work up business in this line and failure would imply neglect of the opportunity presented.

A Small Sum Involved.

The question of the cost of the stock necessary at the start might cause some men to hesitate before inaugurating the new line. As a matter of fact, the initial outlay could be made very light.

New Type of Fixture Designed by the James Morrison Brass Mfg. Co., Toronto.

Rome was not built in a day and, in starting a new department, the tradesman need not lay in a complete line. It would not be necessary to instal the superlative grades of fixtures or lighting domes resplendent with prisms and brass decorations. Instead, a modest stock of the variety of fixtures commonly called for, would do to begin with.

A Toronto jobber has figured it out that a plumber could lay in an initial stock for from $25 to $50. He could carry for that sum a stock of all the usual grades and a few of the better varieties for window display and for customers, who might desire something more expensive than the average.

The outlay involved is therefore not of proportions to deter any plumber from taking up the fixture business.

Gradually, of course, as he found his trade growing, the dealer could enlarge his stock and deal in higher grades. The business would then, however, have passed beyond the experimental stage and the expansion would be undertaken with a certain prospect of adequate returns. On the figuring of the wholesaler quoted above, the risk in the experimental stage would not be great owing to the small amount for which the stock could be secured.

Advantages of the Trade.

They are obvious advantages for the plumber in handling fixtures. He can by that means render his store more attractive. That a bright, clean and up-to-date store brings increased trade is a business axiom that none will deny. The plumber is not ordinarily in a position to present the style of windows that attracts and arrests the attention of the passer-by. His stock does not lend itself to effective display as readily as that of other merchants. To supplement his supplies, then, by so attractive a line as electric and gas lighting fixtures is to furnish the very element needed. Handsome windows can be devised with plumbing supplies and lighting fixtures as the materials used and there is wide scope for artistic arrangement of the various designs and the blending of the variegated colors of the shades. In addition, the interior of the shop can be improved in a wonderful degree by a fixture display.

Feature the Line.

The plumber who has branched out has a ready talking argument that he should not neglect in his advertising. An effective appeal can be made by announcing ability to handle all branches of house finishing. Newspaper space could be devoted to a straight talk along the following lines:

HAVE YOUR HOUSE FINISHED ON TIME.

Every man who builds a home wants to move in as soon as possible. Let Hustle & Co. do the plumbing and heating work and install the lighting fixtures, and there will be no delay. Distribute the work among several firms and you will have to wait. Too many contractors spoil the house warming.

HUSTLE & CO.,
Plumbers, steamfitters and dealers in lighting fixtures.

Newspaper ads could be rendered "catchy" by using illustrations of attractive designs of fixtures. Effective illustrations can be secured of rooms illuminated by handsome lights, showing the aesthetic value as well as the great convenience of up-to-date fixtures. In ad. writing, no opportunity should be allowed to slip of pressing home the salient fact that the plumber is the very man to install lights, by reason of the fact that he looks after your plumbing and heating and could, while he was at it, do the work expeditously and cheaply.

GOSSIP OF THE TRADE

Joseph D. Kegle, L'Original, Ont., tinsmith and plumber, has assigned.

H. F. S. Stewart, plumber, Perth, recently made a tour through the Maritime Provinces.

L. Y. Birmie, plumber, Phoenix, B. C., has sold to N. Mathews and removed to Medicine Hat, Alta.

D. D. Ollie will open a plumbing business at Cedar Cottage, South Vancouver. He is a newcomer, hailing from Oklahoma.

Ald. Harry Mahoney, Guelph, is spoken of as a likely candidate for mayor. His record as chairman of the board of works during the past year has been exceptionally good.

Plumbing Inspector E. P. Fletcher, Calgary, has asked for additional help in his department. He has at present one man to assist him, but another helper is needed to make "smoke tests."

The Cummings Brass, Iron and Wire Co. have been incorporated by F. J. Cummings, Toronto; Thos. Cummings, W. J. Cummings, H. R. White and W. M. Sharpe, of Winnipeg. The capital is $50,000.

The by-law granting a city franchise to a company to lay mains on the streets in Rosedale, Toronto, for the purpose of heating the houses, will not be voted upon at the municipal elections. Further information is desired by the city solicitor.

Angus Groff, who for the past couple of years has been secretary of the Forwell Foundry Co., Berlin, has resigned, and is now city traveler for the Canada Iron & Pipe Co., Toronto, W. J. Cluff becoming city salesman for Steel & Radiation, Limited. Angus, who was married last summer, will remove from Berlin to Toronto.

W. Knell & Co., tinsmiths and plumbers, Berlin, have completed the erection of a workshop at the rear of their new store. It is large and roomy, with wide windows, making the space within unusually light. Mr. Knell states that he is contemplating a further addition next year which would more than double his workshop accommodation.

The Schwab Boiler Heating Co., Ottawa, have incorporated to take over the patents for the heating of a plurality of boilers with one fire, and to manufacture all kinds of heating apparatus, including smoke consumers; incorporators, John Schwab, Winnipeg, Alex. Campbell, J. L. Webster, A. E. Fripp, T. D. McGee, Ottawa; capital, $100,000.

The Toronto council is considering a proposal to have plumbing inspection placed under the city architect or city engineering department. Ald. May declared that the Medical Health officer had no practical knowledge of the subject, and that the plumbing inspectors did not adhere to one standard of inspection. The M. H. O., Dr. Hastings, was instructed to report on the suggestion.

The Torrey committee, St. Johns, N. B. have devised a novel way to heat the Queen's rink for the revival meetings this month. A large hydraulic boiler on wheels which is employed in the winter to thaw out the street pipes, and which the Common Council kindly placed at the committee's disposal, has been wheeled to the yard above the rink and connected with pipes which are being extended completely around the interior of the building and attached to a large number of radiators.

DEATH OF PLUMBING MANUFACTURER.

General regret will be felt among the trade at the death, after a short illness of John M. H. Robertson, of the James Robertson Co., manufacturers of paints, metals and plumbing goods, Montreal. Mr. Robertson was only 42 years of age. All his business life he has been associated with the firm of which his father was the founder. On the death of the latter some years ago Mr. John Robertson assumed the presidency of the company, and under his control the business was extended considerably, branches being conducted in Toronto, Winnipeg, Vancouver and St. John, N.B. with an affiliated business at Baltimore, Maryland. Deceased leaves a widow and three children, his mother, one sister (Mrs. Woods) and three brothers, James A., Alex. A. and Chas. M. Robertson, all of whom are associated with the business.

The funeral was held on Wednesday at Mount Royal cemetery, Montreal, and was attended by the staff, members of the masonic order, and friends, including John and William McPhail, Baltimore; H. S. Harwood, Toronto; P. and J. McMichael, Toronto; Mr. Northwood, McKinley & Northwood, Ottawa; John Keefe, St. John; Octave Matte, Quebec; Alexander Saunders, Goderich; B. Walker, Bank of Commerce, Montreal; A. Ramsay, R. J. Lockhart, J. W. Windsor and George Pratt, Montreal. A delegation from the Master Plumbers also attended, including J. E. Walsh, J. Watson and W. Graham. Revs. M. A. Campbell and Canon Renaud officiated, there being also a masonic service at the grave.

THE LATE JOHN H. M. ROBERTSON, Montreal.

The late Mr. Robertson was a man of retiring characteristics, but was highly regarded in business circles of the city. He was a member of St. Gabriel's church, and for some years acted in the capacity of trustee.

"SECONDS" NOT SOLD NOW.

The association controlling the British pottery trade has decided to discontinue the sale of what are known as "seconds" in pedestal closets.

Any goods which had warped in the firing or become chipped have been sold as "seconds" for some time at a reduced price. It was decided to discontinue the sale, as unscrupulous dealers did not hesitate to dispose of the goods in a way detrimental to the best interests of the trade.

New Buildings, Water and Sewerage Systems

Opportunities Offered by Municipalities and Private Enterprise for New Plumbing, Heating, Ventilating or Sanitary Systems—Work Being Undertaken in Every Section of the Dominion.

Municipal Undertakings.

Biggar, Sask., proposes to expend $15,000 for waterworks.

Rouleau, Sask., has voted $45,000 for a waterworks system.

St. Lambert has abandoned the idea of constructing a trunk sewer.

The Westminster Asphalt Paving Co. has a contract in Victoria, B.C., for $33,204.

Wolseley, Sask., ratepayers will vote on a by-law to raise $24,000 for road construction.

Tenders are being asked for the supply of labor and materials for a public bath house in Winnipeg.

Victoria ratepayers will vote on a by-law to provide $50,000 to place the fire department on a more efficient footing.

Kincardine council is considering the instalation of a sewer system similar to the one now being constructed in Wingham.

F. F. Sinclair, Vancouver, has been awarded the contract for two miles of sewer, at New Westminster, B.C., for $55,795.

The ratepayers of Chippawa, Ont., defeated the by-law to raise $30,000 for a waterworks system in the village. This is the second time it has been defeated.

Vancouver will vote on by-laws at the first of the year calling for civic improvements, aggregating $3,000,000, of which amount $900,00 is for schools. In this amount is not included $500,000 for sewer connections.

The ratepayers of Midland will vote upon three by-laws, one to raise $20,500 for a new school, one for a loan of $50,000 for 20 years to a marine railway, the third for a fixed assessment on a new flour mill company.

Engineer Potter has reported on the proposed sewage and water system at Edmonton. A sewer system, making provision for a city of 250,000 population would cost $4,000,000, and a water system on the same basis, $400,000.

Extensive additions to the sewerage system in Victoria, B.C., are recommended by the city engineer. The total cost is estimated at about $235,000, the chief portion being for extensions in the city north of Edmonton Road. This scheme is exclusive of the $46,400 to be immediately used for sewerage extension.

Public Buildings.

An Orange Hall is to be erected at South Vancouver, B.C.

Tenders are being called for a new post office at Dresden, Ont.

A by-law is being introduced in Belleville, for $30,000 for a new public school.

The Dominion Government will erect an addition to the East Block, Ottawa, to cost $222,800.

John Burns & Son, Nelson, have the contract for a new court house at Kaslo, B. C., contract price being $27,560.

The contract for the post office at Battleford, Sask., has been awarded to M. A. Pigott & Son, Hamilton, Ont.

The Third Avenue Methodist church, Saskatoon, will erect a new $100,000 edifice, with a seating capacity of 1,500.

A local syndicate will erect a theatre of brick and concrete at New Westminster, B. C., estimated cost, $150,000.

The London board of education has awarded the contract for the new Alexandra school to Hyatt Bros., for $44,754.

Debentures are being issued by Perth county council to the amount of $11,000 for a new registry office for the north riding.

Zion Presbyterian church, Carleton Place, Ont., will build a new edifice on the site of the structure burned last summer.

The new frame temporary post office at Cranbrook is nearly completed. The permanent structure will be commenced in the spring.

The Saskatchewan Government has decided to locate the provincial asylum on the banks of the Saskatchewan river, North Battleford.

The hospital board at Fort William, Ont., has decided to spend $25,000 for a new nurses' home, a larger kitchen and refrigerator plant.

The congregation of St. Andrew's church, Moose Jaw, have decided to erect a congregational building in the northwest part of the city.

Calgary will build five new schools at a cost of $300,000, two of which will be "cottage" schools to cost $3,700 each. The high school will be improved to the extent of $43,000.

General Building.

J. A. Hudson is preparing plans for a $25,000 apartment block in Winnipeg.

The Bank of Commerce will erect a handsome building in Regina in the spring.

A $75,000 factory will be erected in Newmarket, Ont., for the Office Specialty Manufacturing Co.

The site for a Y. M. C. A. has been purchased opposite the town hall, Cobalt. The total expenditure is estimated at $35,000.

Challoner & Mitchell and P. R. Brown will erect a business block in Victoria, B.C., at an estimated expenditure of $400,000.

Transportation Ltd., Montreal, have secured a permit for a million dollar building on St. Francois Xavier St., Montreal.

The Traders Bank building in course of erection in Regina will be three stories in height, covering an area of 25 feet by 80. It will be ready for occupancy in January.

The Ritz hotel interests have acquired property on the corner of Drummond and Sherbrooke streets, Montreal and eighteen months from date expect to have a large hotel completed.

Recent Ottawa building permits include: Geo. MacDonald, dwelling, $3,000; D. K. Edwards, dwelling, $5,000; J. P. Band, dwelling, $1,500; R. A. Kemp, dwelling, $3,500; F. X. Laliberte, dwellings, $5,500.

The new building of the Canadian Bank of Commerce, Winnipeg, will be one of the finest banking houses, not only in Canada, but in America. About $750,000 will be expended and it will be ready for occupancy in June 1912.

Building permits at Victoria, B. C., were issued as follows: Mrs. M. Banman, dwelling, $3,100; H. A. Porter, house, $3,500; T. L. Toy, house, $2,400; Richard Hall, dwelling, $12,000; Moore & Whittington, dwelling, $2,500, and Miss L. M. Sylvestor, dwelling, $2,100.

TORONTO ASSOCIATION ACTIVE.

The master plumbers association of Toronto are making an effort to get more members by holding a series of social entertainments during the winter months, the first of which will be held on Thursday, Nov. 17. It will take the form of a progressive euchre party with other games for those who do not play euchre. All master plumbers have been asked to attend. It has also been suggested that several of the social evenings be held in the form of smoking concerts, to enable the members to get together and talk among themselves, thereby creating a better mutual understanding.

Secretary Hicks read the report of the auditors on the financial statement of the recent convention, which showed a balance on the right side of the ledger. T. F. Frankland submitted the report of the entertainment committee.

The annual election of officers will take place on the first meeting in the new year.

PLUMBING AND HEATING MARKETS

MONTREAL.

Nov. 14—Plumbing supply houses report excellent business, with good prospects of a strong demand all through the winter. Foundations even now are being put in, and there is plenty of evidence that building will be continued through to the spring. The firm tendency to prices is stimulating buying. There is also the rush on to get goods by water before navigation is tied up. The boiler and radiator makers are well together, and prices are more firmly held than ever.

With this continued activity in business, it is natural that makers should be short on supply, and the various plants are only just keeping pace, if they are equal to, the demand. In fact, doubts are expressed in many quarters that the spring will come with the stocks in makers' hands very far from being in good shape to meet the needs of the trade. All this makes a very good tone to trade generally, and the winter is regarded with much more equanimity than is usually the case. This year looks to prove a banner one all the way round. It is not surprising under such circumstances that a very strong tone is in evidence.

Soil Pipe.—Soil pipe is still moving out in great shape, there being heavy consignments to inland ports. The city trade with so much foundation work going on is still very good. The market is firm, and we quote: medium and heavy, 70 and 10.

Lead Pipe.—There is a good movement in pipe, and some heavy lots have gone out by boat. The idea that pipe may be advanced owing to the stronger tone of the crude metal market seems to have stimulated the idea to do a little extra buying. We quote: Lead waste, 9c per lb., calking lead, 4½c per lb.; traps and bends 50 per cent. off.

Solder—Despite the high figure of tin there is no advance in solder, although prices are naturally very firm. There is a very good buying movement, some stocking up being noticed. We quote half and half 22c, wiping 20½c.

Iron Pipe—A steady volume of business is going through, orders being heavy for the time of the year. The market is unchanged, and we quote: ¼-in. black, 63; galvanized, 48; ⅜-in. black, 59; galvanized, 44; ½-in. black, 69; galvanized, 59; ⅜ to 4-in. black, 71½; galvanized, 61½.

Radiators and Boilers.—Orders keep up strength, and manufacturers have little time to spare, while there is no question of starting stock for the next spring demand. Prices are well held. We quote: Steam boilers, 60 and 5; round hot water boilers, 50 and 10; hot water radiators, 50 and 7½; steam radiators, 50 and 7½ and 2½ per cent.

Enamelware — Jobbers report heavy trade. Manufacturers are working at full pressure, and there is no stock accumulating. Prices are well held, and prospects are extremely good for the winter.

Metals. — The bulling movement has continued in London tin, and the local market is now at 40c. Copper is 14. Lead 3 2-5c; spelter 6¼c.

TORONTO.

Toronto, Nov. 13.—There has been no interruption to the activity that dominates the plumbing and heating markets. In fact, the colder weather has brought with it an acceleration of business due to increased haste on the part of the trade to finish up all work before winter conditions set in. This is practically certain to last for three weeks or so still, after which the demand will show a tendency to slacken. Supply houses anticipate that work will be continued in Toronto pretty well all through the winter, although operations throughout the province will be suspended with the advent of cold weather.

The season has been in all respects a remarkable one. Supply houses say that they have not yet caught up with the demand, general conditions having been more satisfactory than for many seasons back.

A tendency toward stronger quotations is reported in solder. Otherwise market conditions remain practically the same.

Enamelware.—The demand is, if possible, brisker than before, and the supply houses are barely able to meet the requirements of the market. The increases noted last week have been maintained, and the same prices are practically sure to obtain until the end of the season. Rolled rim sinks, 16 by 24 inches, are quoted at $6.50, and the 18 by 30 size are selling at $8.10.

Soil Pipe.—The market remains firm, but the demand has declined somewhat with the change in weather conditions. Light pipe is quoted at 60 and 10, medium and heavy at 70 and 10, 7 and 8-inch sizes, 50 per cent. Fittings are quoted at 70 and 10 off.

Lead Pipe.—The price is firm for lead pipe, due to the increased quotations on lead, 30 per cent. being quoted. Lead waste is 9c per lb., and caulking lead 4½c per lb. Traps and bends are quoted at 50 per cent.

Iron Pipe and Fittings. — With a strong demand for these lines, the prices have remained firm. Malleable fittings are discounted at 37½ to 40 per cent; cast iron fittings from 60 to 65c., a slight firming up. Cast iron bushings are quoted at 70, and malleable 65c. Nipples bring 75 and 10; headers, 60; flanged and malleable-lipped unions, 65 per cent; galvanized pipe is $6.35 and black pipe $4.70 per hundred feet, 1-inch size.

Solder.—Prices are firmer in solder. The constant fluctuations in this line make it rather difficult to give quotations, but the figures generally given quote 22c and 23c for half-and-half, an increase of two cents; and 19c to 20c for wiping, a gain of 1c. The demand is strong, but supply houses report sufficient on hand to cope with the situation.

Brass Goods.—The demand for plumbers' brass ware is on the increase, and a better market yet is anticipated. Orders are being filled for rapid delivery to all sections. No changes in price are recorded.

Boilers and Raidators.—The demand is at its height, but it is expected that the early winter lull is not far off. In the meantime a large number of rush orders are being received. Supply houses have been well satisfied with the season's trade, which has been in excess of past seasons, and has had the advantage of being spread over a longer period of time than usual. Discounts are quoted at 50 and 10 for hot water boilers and radiators, an extra 2½ being given for steam radiators.

FACTORY SANITATION.

The factory sanitation law of New York State, as the result of legislation of 1910, now stipulates among other things that: Factories must be supplied with pure drinking water. Wash rooms, with sinks and waste service, must be maintained. Where females are employed, dressing or emergency rooms having solid partitions and with at least one window opening to the outer air, must be provided. The Commissioner of Labor may require as many inside sanitary closets for each sex as he thinks advisable. The sanitary law is strengthened by making spitting upon floors, walls or stairs of workrooms, unlawful, and by requiring cuspidors and receptacles for waste and refuse.

Recent building permits in Winnipeg include: J. Forseng, dwelling, $2,200; L. G. Hallgrimson, dwelling, $2,500; Merrick-Anderson, warehouse extension, $5,000; E. F. King, dwelling, $4,000; C. R. Newman, dwelling, $2,000; Dunn & Wallace, dwelling, $2,750; W. J. Baldry, dwelling, $4,500; Mark Fortune, garage, $3,000; L. Bjoskman, dwelling $1,600.

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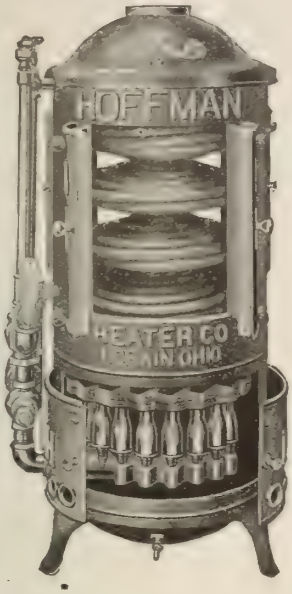

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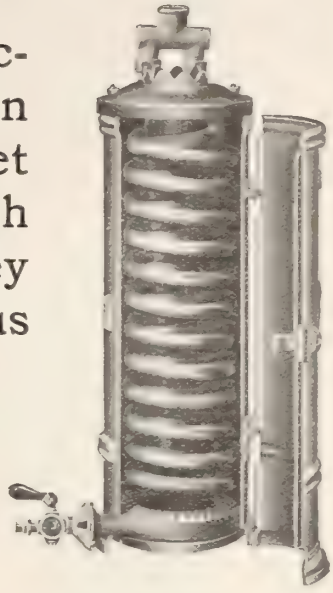

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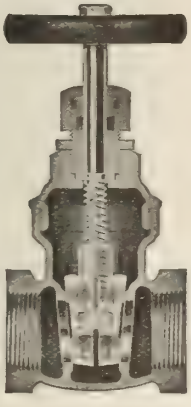

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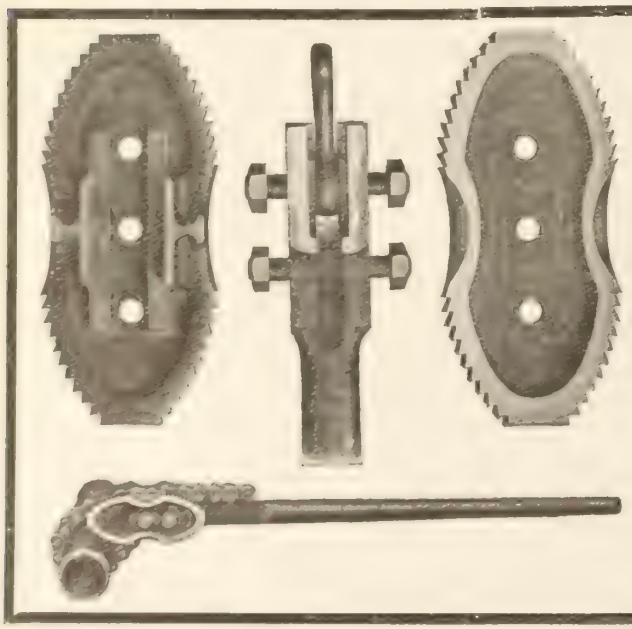

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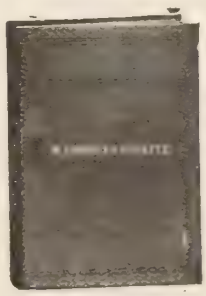

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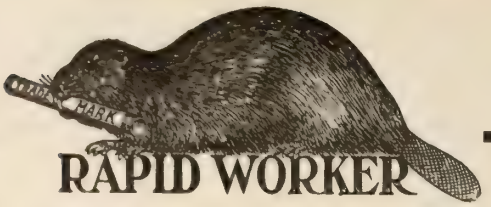

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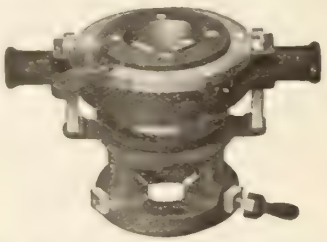

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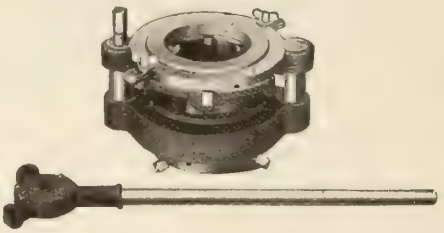

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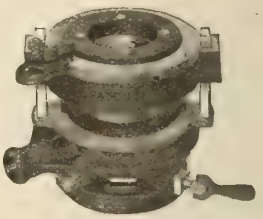

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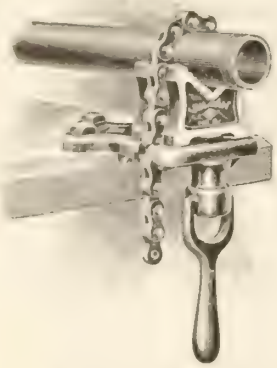

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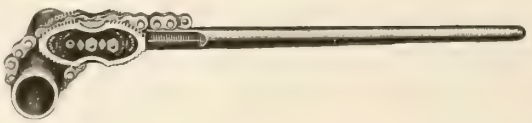

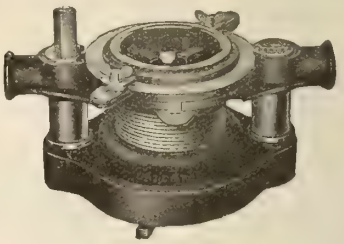

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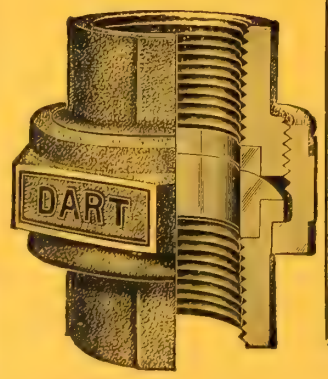

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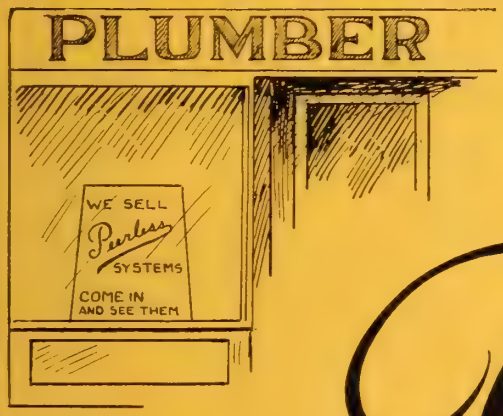

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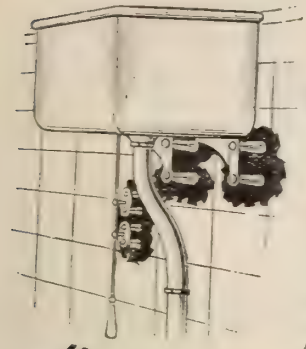

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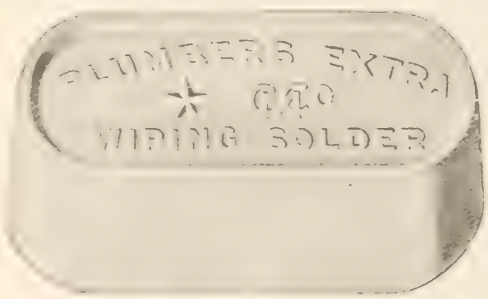

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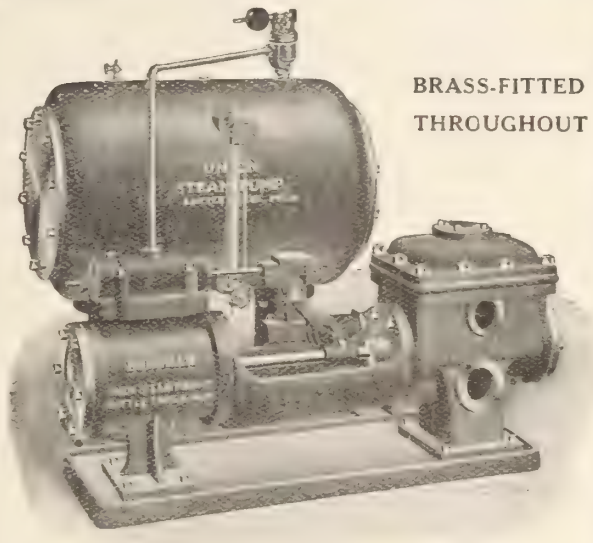

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TORONTO, DECEMBER 1, 1910

CREDIT PROBLEM DESERVES CONSIDERATION.

The past year has been a good one for the building trades in most Canadian cities, but from all reports received, master plumbers in most of the cities have not reaped very material benefits from their activity, the reason being the low prices at which work has been undertaken. Contract after contract has been accepted at prices which barely cover cost of labor and material, the consequent result being that overhead expenses, such as rents, telephones, advertising, cartage, etc., have totalled up to sums which have, in some cases, forced the firms to close up their shops.

The heavy losses which manufacturers and supply men have sustained as a result of the failure of plumbing and heating firms, whose business methods have been of the loose character referred to, have compelled the supply men to give thought to devising new plans of protecting themselves and, incidentally, the plumbing firms who are conducting their business in an intelligent manner and who are being injured by the thoughtless and reckless masters.

The subject of credits has been gone into very closely by both Associations of Master Plumbers and Supply Men in the United States with the result that trade conditions have been materially improved in many cities.

Now that the busy season is nearing its end and more thought can be given to association work, plumbers and supply men in all parts of Canada should take up this subject in an effort to better conditions for all branches of the trade.

But only through frank and open discussion in trade associations and the carrying out of agreements entered into can betterment be secured. The associations must take the lead and they must be big enough to endeavor to better, not only the conditions of the members, but of all engaged in the trade.

WINDOW DISPLAYS IN PLUMBING SHOPS.

It is difficult to understand why so many plumbers refuse to pay attention to their window display, and also allow the interior of their store to be so dirty and destitute of any ornamentation. If they are intelligent men they must notice that all the stores around them are attractively trimmed; that even the small grocer or butcher makes some attempt to entice custom. Do these plumbers imagine that their trade has no need of this kind of advertisement, and that a wash bowl thrown carelessly into a window and filled with odd faucets, and fittings will have just as much selling power as a bowl looking spick and span and shown in as attractive a setting as the plumber can evolve? Do they think that plumbing lines, out of all the articles that are being sold across the counter, are the only ones that need no display? It would seem so.

The plumber to-day stands for sanitation and cleanliness. The bath-room ware in its beautiful white finish looks clean and wholesome, and no careful housewife allows dust or dirt to spoil its surface. Yet this same ware is more often than not shown to the public in the plumber's shop, covered with dust and finger marks in utter contrast to what it should be. Until within recent years it was a generally accepted truism that a plumber could not go into a house without spoiling everything, in the course of his work, and leaving more dirt to wash up than a whole corps of plasterers. But whatever truth this might have had in the old days, the same thing cannot be said of the work of the majority of plumbers to-day. The public are being weaned from this belief, but still many hold tenaciously to it, and it cannot be said that a landlord or tenant can have a very high opinion of the carefulness or tidy habits of a plumber if they notice that his place is looking more like a junk shop than anything else, and that there is nothing clean and wholesome in it. One cannot imagine an inviting shave from a barber with dirty hands.

Then there is the great point of drawing custom. A plumber has a great amount of prospective trade passing his doors. Every man or woman may be wanting a plumber some day or other. If by his attractive displays a plumber makes people observe his windows, if he so impresses his shop upon their memory that immediately they want a plumber, they think of him, then his window displays have done great work.

Plumbing lines are attractive, while they lend themselves to good display. All a plumber needs, if he has room enough, is to represent a bathroom or one corner of it. By throwing the whole window open he can turn the entire interior into a bathroom. If he has no bathroom stock then he can arrange lid brass valves and steam fittings, etc., in an attractive fashion in his window.

The great thing is to make the window and the interior look inviting and clean, and to give observers and customers the idea that the plumber is a careful and clean workman, and that any work he does will be done with the utmost regard for the welfare of the walls, ceilings and floors. Whatever trouble it costs a plumber to keep his place in shape it is more than repaid by the reputation he will establish among his district.

MONTREAL NEEDS A PUBLIC LAVATORY.

The city of Montreal looks to be a little nearer the possession of a public lavatory. The City Council have at last bestirred themselves and recommended the Board of Control to take action. The latter have therefore requested the City Surveyor to make an estimate and place the figures before the Board.

Of course the city in former years have got as far as this, but there is now a little difference in the personnel of the Council, and public needs are not so readily shelved. The old excuse, when citizens brought forward the necessity for public conveniences, was the lack of money. This may still be the plea of the City Council, but the chances are much greater that a fair attempt will be made to do something.

It is a disgrace to the leading city of Canada that there should be not one public convenience within its limits, and that visitors and citizens have to depend upon the sufferance of the business houses, stores and saloons. The unprogessiveness of Montreal is often commented on, in no direction is this more pronounced than in this criminal lack of public lavatories. There is a great outcry as to intemperance going on, there is a general demand that something should be done to prevent young boys and girls, men and women, from resorting to saloons, yet the City fathers, by their neglect as to public conveniences, are doing their best to drive people to these very places.

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Next National Convention will be held at Port Arthur and Fort William about June 1, 1911.

CALLS CHANGES IN NAME REACTIONARY.

The Heating and Ventilating Magazine, New York, commenting upon the proposed change in name of the National Master Plumbers' Association of Canada, says:

> "A significant action was taken at the recent annual convention of the Canadian master plumbers when a motion was made to change the name of the organization to the Canadian Society of Sanitary and Heating Engineers. The fact that it was referred to the incoming executive committee, after receiving the endorsement of the resolutions committee, would indicate that the idea finds considerable support among Canadian plumbers. The argument was made that the master plumber of to-day does far different work from his predecessor of a generation or two ago. Instead of being a worker in lead, as the word "plumber" signifies, he is a man of science, having as much, if not more, to do with the sanitary condition of the community than the medical profession.
>
> "Admitting the force of this argument, it is difficult to see why the master plumber should desire the appellation of 'heating engineer.' In this country we already have master plumbers and sanitary engineers in the plumbing field and master steam fitters and heating and ventilating engineers in the heating field. The two lines are thus conveniently and accurately designated and the proper distinctions made.
>
> "With the growth of the two industries their convergence is no less distinctly marked than their divergence. While many master plumbers continue to do steam fitting, and vice versa, it is nevertheless true that each industry has a field sufficiently large to attract the best and undivided efforts of those engaged in it, and the tendency is all in that direction. Moreover, the accepted definition of a heating engineer, nowadays, implies knowledge of many features of mechanical engineering, such as those involved in the mechanical equipment of buildings, as well as those connected with central station work, that are quite foreign to the training of the ordinary master plumber.
>
> "Thus the movement appears to be distinctly reactionary and one calculated to introduce an entirely unnecessary confusion in the commonly-accepted meaning of the term 'heating engineer.'"

In the United States there are two associations of masters, one of plumbers and the other of steam fitters, although the former accepts as members both plumbers and fitters and the latter association is a comparatively small organization with membership chiefly confined to the large eastern cities. There are also associations of "Plumbing Inspectors and Sanitary Engineers" and "Heating and Ventilating Engineers" in the United States, both of which have less than ten members in Canada.

In Canada the field is occupied only by one organization, the National Association of Master Plumbers and Steamfitters and in view of the change brought about in the trade by the evolution which has forced plumbing and heating contractors to become engineers, rather than workers of lead or fitters of pipes, there seems to be no valid reason why the trade in Canada should hesitate to change the trade names by which they are known, but which are really a misnomers.

The effort being made by progressive men in the Canadian association to have their craft choose a more dignified name is commendable and surely there are none who have a greater right to the term "sanitary and heating engineers," than the practical men who have worked up from the ranks and become successful contractors in their chosen calling.

Because others have been allowed to appropriate the names in the United States is no reason why Canadian plumbers and steamfitters should hesitate to change the name of their association if, after the executive has considered the matter, the question is brought up for decision at the convention to be held at Port Arthur next June.

ORGANIZE TO PROMOTE SANITARY LEGISLATION

Some fifteen master plumbers of Lake County Indiana, met recently at Gary, and organized the Lake County Sanitary Association, to promote sanitary legislation in Indiana. At this meeting plans of procedure were discussed. A campaign of education in order to win popular support of beneficial sanitary legislation is to be the first move of the new organization.

Gary, Terre Haute and South Bend, according to the plumbers' ideas, are the only cities in the State with adequate sanitary ordinances, and an effort will be made to extend the work accomplished by these three cities. The plumbers are in favor of a State plumbing law to force inspection of work by the State and examination of plumbers by an examining board.

The Plumbing Business

As long as the plumber clings to his traps, tubs, pipes and wrenches with a mind rising no higher than the mechanical details of his trade, he will be merely a "plumber." This series of articles will deal more particularly with the business end and readers should derive benefit from reading them

Written for the Plumber and Steamfitter by Charles H. Denison.

CHAPTER IX.

I went into a plumbing and heating shop but a short time since simply to look things over. "Are you doing anything in the line of specialties in the business?" I asked of the master. "Certainly," he answered and as he pointed to the show window I had to take notice. The lay out consisted of a few nickled supply pipes, a couple of closet bowls, a lavatory or two and some towel racks beside of a few toilet paper holders. That was his idea of a line of specialties and I am bound to confess that he is not alone in the deal for there are hundreds of others who have no better idea of what comes under this head than did this man.

They have never taken the time to consider the matter and really find out what comes under this head. The catalogues that various manufacturers spend time to get out, often at an expense of thousands of dollars, lie unexamined on the desk or are carelessly thrown into the waste paper basket and our plumber goes sailing on bucking the solid wall of business adversity year after year until he dies with his boots on or falls by the way side.

A Surprising Number.

I presume that if I should take a pencil and paper and make out a list of the articles that could be carried that it would amount to a surprising number. As I have, at various times, made lists more or less complete, I shall not do so at this time. Suppose that you do this for yourself and see the many small articles that you could carry with a very small amount of cash invested and then figure up what the profit would amount to, in case that you made the sales. That is the bone of contention, as I look at the matter. The plumber is afraid that he will get stuck for a few dollars and he is so sure that he never would sell anything along this line, that he hasn't got the nerve to tackle the deal, knowing, meanwhile, that he must be something of a salesman, or the thing would be all to the bad.

So he settles matters to his own satisfaction by saying "well you've got to show me" and passes up the deal. The attitude of his mind is against anything new or different and while he makes a bluff at wanting to be "shown" he actually would refuse to be convinced by anything short of the "crack of doom."

This position of the masters (or those so styling themselves) is one of the greatest impediments to the progress of the craft and business that exists. It is a wolf in sheep's clothing attitude of the mind, an ignorant sketicism that will forever keep a man with his nose on the grindstone as long as he remains so hide bound. Just as soon as the mental attitude loosens up a bit, just that quick will you see the man begin to forge ahead in his business. There is no use in saying that specialties, of extra attachments cannot be sold for, from actual experience, I know better.

Big Profits in Specialties.

A reasonably well dressed man who is merely a fair talker can prove that I am correct. Take such a simple thing as a radiator shield. (I do not know whether or not this might be truly called a specialty, but at any rate it is not generally furnished and may be considered an extra). The man can go into any town and if he has three grains of common sense and knows how to play his cards, he can take in a nice little stake. It's no "bunco" game for he is giving value received for the money he takes in. He can also have in his pocket some good reliable air valves and put them on, for many that the contractor uses are not worth a dern. With a few anti-splashers to demonstrate with, this man can actually average more clean profit than many a master who racks his brains to make strap and buckle meet. I have not only turned this very trick myself, when out of a job and not in business; but I know of several others who have done the same and I believe that I can average between five and ten dollars profit per day for a straight year at the specialties. That would mean somewhere between $1,500 and $3,000 profit and we all know that there are many masters who do not realize that amount of profit.

Do not understand that I advocate the masters letting his regular business slide and taking to making a house to house canvass. Attend, with vigor, to the regular business, but what is the matter with selling the specialties at the same time; and of PUSHING them when the regular business is on the bum?

Throughout the length and breadth of God's green earth I do not believe that there is a business that has been run on such loose principles and with so little appreciation as to what it could be really developed into as this same plumbing and heating business, which could be turned into one of the best paying propositions in the field of the day.

Will Bear Closse Attention.

Therefore, I say that this matter of specialties will bear the close attention and best thought that any man in the business can put upon it, because it is, if rightly managed distinctly a money making proposition and one that will pay a better percentage of profit that the general run of matters especially of one sharpens up their pencil to the 10 per cent. point. A faint heart never won a fat lady, they say, and the party who dares not venture a few dollars at the game displays considerable lack of sense. Say, my friend, what do you do every time that you take a job on so narrow a margin that the breakage of the closest bowl will knock the profits higher than "Kilroy's" kite? Are such things true? Why I have seen many a bath room job taken on a possible profit of less than ten dollars. So have you if you have been in the business very long. When you bite off anything of this kind are you taking any chances?

And yet you will hold off from the specialties like a long eared specimen just because you might "get stung." This is right along the line of many other conditions that exist in the business as it is conducted to-day.

Opinions Expressed Regarding Durham System

Many Instalations in Montreal, But Only Three in Toronto so Far—Favored by Many for Use in High Buildings—Differences of Opinion Held by Experienced Man in Both Canadian and American Cities.

Considerable interest has been excited amongst plumbers in Toronto as a result of the application for and granting of a permit to use the Durham system of piping in the drainage system of the new Bell Telephone building on Adelaide Street West, Toronto.

W. J. McGuire & Co., who have the contract, are strong advocates of the Durham system, having used it on quite a number of buildings in Montreal as well as on the only two structures in which it is in operation in Toronto, the Traders and Royal Bank buildings In spite of the opposition of some of the smaller firms who took the matter up last summer, W. J. McGuire & Co. were able to convince the Medical Health officer that the Durham system was practical and workable and secure a special permit for its use in the Telephone Building.

At the National Master Plumbers' convention, held in Toronto on Labor Day, Robert Ross, one of the most respected and widely-known plumbers in Canada, warned the delegates against allowing the Durham system to get a foothold in Canada, as, in his opinion, it was an unsanitary method of doing work, which, if encouraged, would be undertaken by unskilled workmen having no knowledge of the principles of sanitation. Mr. Ross' remarks met with the general approval of the delegates, although no real discussion of the subject was gone into.

Wm. Mansell, of the Pudry-Mansell Co., Toronto, is another Toronto plumber who is not favorably impressed with the system, although he admits that he has not given the subject close study. Wrought iron, he points out, eats out quicker than cast iron pipe, but in the case of high buildings, where there is danger of swaying, the fact that screwed wrought piping would have more spring than calked cast piping may give it an advantage sufficient to counterbalance the objections against the use of wrought pipe.

George Clapperton, of Bennett & Wright, Toronto, says his firm installed the drainage system in the new G. T. R. offices in Montreal about ten or twelve years ago, the Durham system being used, with very satisfactory results. Mr. Clapperton, on a recent visit to New York, inspected the plumbing and piping work in the new Pennsylvania terminal station, where all drains and piping above the floor were of galvanized iron piping, installed according to the Durham system, and he considered it a splendid job, the engineer in charge stating that in all his thirty-five years' experience with both styles of drainage, he had never seen a better instalation. "It is the expansion of the lead in the joints of cast iron piping that causes trouble," said Mr. Clapperton, "and while cast iron will certainly last longer, this hardly makes up for the advantages of using the screwed point on wrought iron piping in high buildings."

What the Durham System is.

One authority, in describing the Durham system, says:

"The Durham system is a system of piping large buildings with galvanized or tar-coated wrought-iron or steel pipe and recessed drainage fittings which are put together with screw threads. It is claimed that for large work this system has the advantage of greater strength of joints, as it is impossible for them to work loose, as is frequently the case with joints caulked with lead. Plain black wrought-iron pipe should not be used on account of corrosion. Both pipe and fittings should be either galvanized or coated with tar. The systems are the same in regard to the piping, the difference being merely in the method of instalation. The fittings used are made especially for the purpose, having a recess so that when the pipe is sent home there will be a smooth, continuous inner surface. The fittings are made with long curves so as to offer as little resistance as possible to the flow of water, etc., inside the pipes. While it might be thought that this system would support itself, it is bad practice not to thoroughly anchor the system. The vibration of the stacks will sooner or later spring the joints, causing them to leak."

Experience in the States.

At one of the meetings of the American Society of Inspectors and Plumbers and Sanitary Engineers, the relative durability of cast iron and wrought iron house drains came up and the statement was made that in the City of St. Louis it had been necessary to go to a considerable expense in one large building to take out the wrought drain pipes, which had corroded so as to be no longer safe, and to substitute cast iron pipe. In New York City as yet no such complaint as to the service rendered by the wrought pipe has been made public.

Nevertheless, there is a feeling that a more durable construction is provided when cast iron soil and waste pipes are used, and the specifications of some of the leading sanitary engineers and architects require the use of cast iron piping. The chief inspectors of plumbing in large cities, according to the Metal Worker, have been investigating the condition of the wrought pipes in large buildings, and, in a number of instances, have found their condition such as to require replacing. There is not as much information on record on the subject as would be desirable to those who are seeking the absolute truth, but there is no question but that the majority of the plumbing trade in both the United States and Canada favors the use of cast iron piping in drainage systems of both large and small buildings.

Charles B. Ball, chief sanitary inspector of Chicago, gives The Plumber and Steamfitter his views on the subject in the following letter:

"My judgment has for a long time agreed with the conclusion that wrought iron pipe systems are desirable in all classes of plumbing. Although some questions have been raised as to the possible life of wrought iron piping, as compared with cast iron, I consider that there are very few, if any, authentic cases of damage to galvanized wrought iron piping due to the passage of ordinary sewage through it. So far as I have been able to note, the cases of which complaint of deterioration has been substantiated, have been cases where the pipe was not galvanized in the first place, or where some unusual circumstances, as of acid or some other corrosive fluid, affected its life. I, personally, have no tesitation in recommending the use of wrought iron piping for ordinary plumbing in all classes of buildings."

In the Experimental Stage.

The chief charge against the Durham system is that much of the pipe used in it is steel, instead of wrought iron, and that both wrought iron and steel pipe are short-lived. So far, however, sufficient data has not been gathered together to make this objection a valid one, possibly because the time since the instalations were made has not been long enough. Should this evil be manifested in any great degree, however(it can be taken for granted that the enforcement of plumbing inspection will bring it to light in no uncertain way, and the cost of maintenance, repair and replacement will be sufficient to bring about either the rejection of the Durham system or

(Continued on Page 13.)

Plans and Specifications for Installing Plumbing Fixtures

Address Delivered By O. B. Craig, Pittsburg, Before a Meeting of Plumbing Inspectors at Trenton, N. J.—The Specification Form Approved by the U. S. Government Departments at Washington.

There is nothing entering into the construction of the modern building which is more intimately associated with the health and comfort of its inmates than the plumbing. Under this general term is included the drainage from and water supply to the fixtures, the proper arrangement of all traps and vent lines, the heating of water and the apparatus therefor, and the proper installation of all plumbing fixtures, and such mechanical appliances as house and fire pumps, sewage ejectors, fire lines, circulation pumps, suction and supply tanks, etc.

The plumbing system for a building may be very aptly compared with the circulation and intestinal systems of the human body. The water supply lines are the arteries which carry the life-giving fluid to the remotest corners of the structure. The sewers are the intestinal canal through which the waste matter is discharged, and the proper action of the one is just as important to the building and its inmates as is the function of the other to the human body.

Notwithstanding the important bearing of the plumber's work it is as a rule given little study by some architects in the preparation of his plans and specifications. He will elaborate most exhaustively on his construction and materials which go to make up the superstructure, making numerous full-size detail drawings of doors windows, interior and exterior trimmings and decorations, but when it comes to the plumbing, the most important of all from the standpoint o fhealth and convenience, he is woefully lax in his instructions to his plumbing contractor. And it is greatly to the credit of the much-maligned plumbing trade that such good work is produced with such meagre assistance as the plumber gets from his plans and specifications.

Drawings are Incomplete.

The architect in drawing up his contracts, usually stipulates that the plumbing must conform to the drawings and specifications, which clause would necessarily imply that the drawings and specifications contained all the information that might be necessary for the plumbing contractor to not only give an intelligent figure on the work required, but also to carry out his contract in a manner to ensure the very best results obtainable. But let us turn to those same drawings and specifications, and what do we find? The average building plans show us a toilet room located here, a sink there, lavatories scattered promiscuously, with the few lines on the basement to indicate the general direction of the sewer, but little more. It is up to the plumber to figure, if he can, how he is to reach the various fixtures with his lines; where to locate his water heater, pumps, tanks, etc., where to install his risers and vent lines; and how he is to keep out of the way of the Stall Contractor, the Heating Contractor, the Electrician, the Sheet Metal Contractor and, in fact, every other artisan on the job; for it seems to be the generally accepted rule that the plumber must give way to all of these more favored trades, and crowd his work into impossible out-of-the-way places, working under handicaps which would hard-

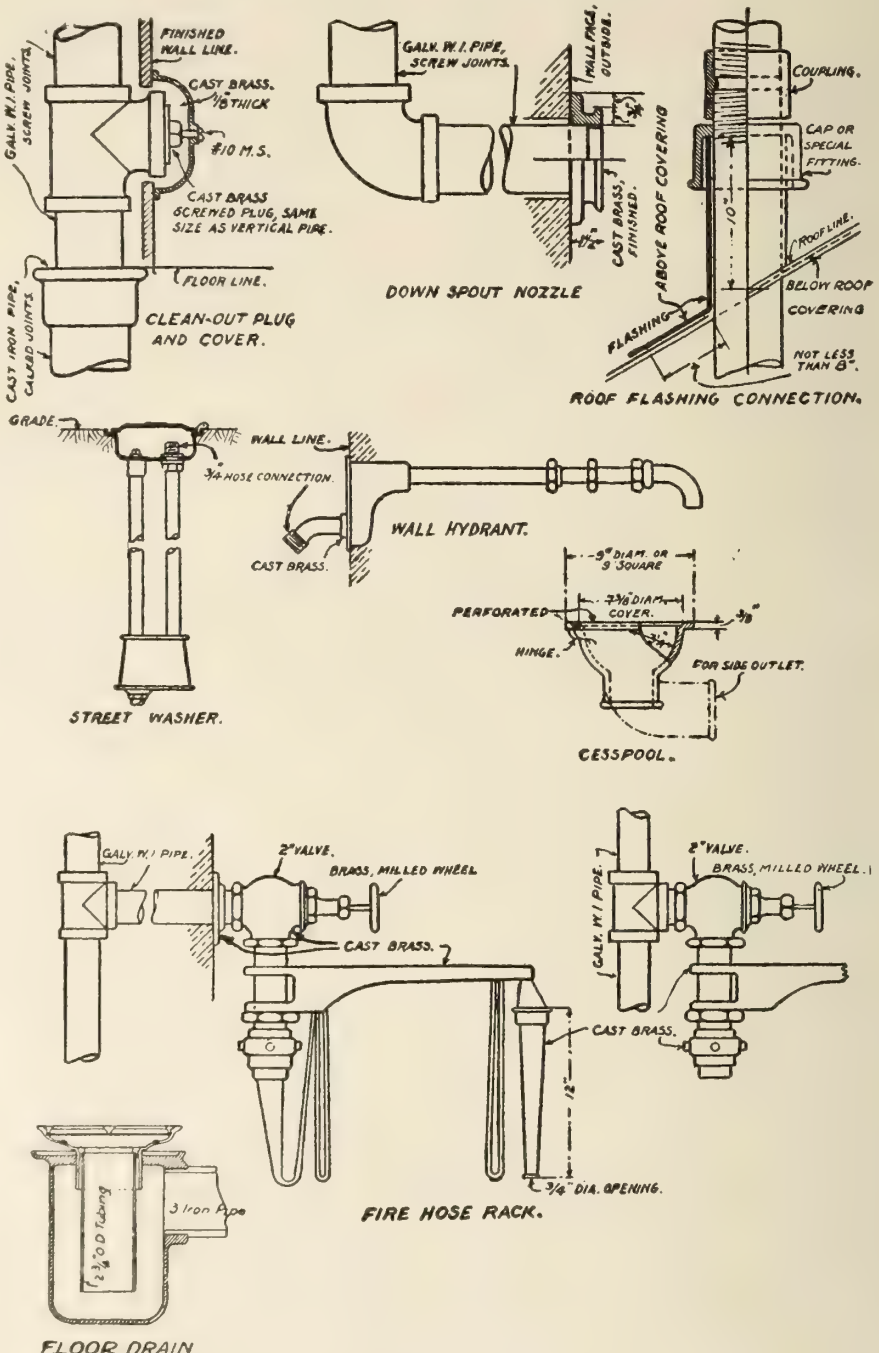


Plate No. 1. Showing Fittings and Demensions in Accordance with U. S. Government Uniform Specifications.

ly be tolerated in other lines of building construction.

On the drawings he finds not a line to indicate where his water pipes are to go nor the size thereof; and as for locating his basement machinery, well, let him get along with whatever space the other contractors have no use for.

The incomplete nature of the drawings is oftentimes to some extent recompensed by a carefully-detailed specification, but unfortunately the specification is generally indefinite and inadequate, abounding in such terms as "pipes of ample size," "valves satisfactory to architect," "water heater of sufficient capacity," etc., etc., thereby placing upon the plumber almost the entire responsibility for the designing and proper working of the system. And woe betide him should his judgment be at fault.

A Case in Point.

A case in point came to the writer's notice long since. A large building involving more than the usual amount of plumbing was designed, and plans were submitted to some half dozen plumbing contractors with request for bids on the work. Beyond showing the locations of the various toilet rooms and the fixtures therein, there was not a line in the drawings to guide the bidder, and as for specifications there were absolutely none, each bidder being requested to submit his own specification with his bid. Each of the bidders after spending a great deal more time in figuring the job than would otherwise have been necessary, submitted his proposition, but all to no purpose, as such a wide variation of ideas was found and such a lack of uniformity in the cost of the work that the designers were compelled to readvertise for bids on a uniform and carefully-drawn plumbing plan and specification.

The plumbing for a building should be so indicated in the drawings and described in the specifications as to cover everything required, and so clear and concise as to be readily understood by the average plumbing contractor. The positions of all mechanical appliances in connection with the plumbing should be clearly shown upon whatever floor plan such appliance may be located. All runs of piping through basement together with the size of same should be concisely indicated in the basement drawing. House traps, bell traps, area drains, pump pits, conductor lines, etc., should be located beyond dispute. Branches to risers with size plainly indicated, together with location of such risers should be shown, and valves and stop cocks should be plainly indicated.

In addition to the plumbing lines shown on the plans, there should be prepared a riser diagram, showing the serving of each and every fixture on each floor of the building. This riser diagram should show clearly all water lines, waste lines, soil lines, vent lines, fire lines, etc., at each and every floor throughout the building, giving the relative position and arrangement of the waste and vent lines for each fixture, with the sizes of all lines plainly designated. Pipes of the various characters can be indicated by different kinds of broken or dotted lines, with a properly-arranged index on the drawing showing the kind of service each line performs.

Where there are groups of fixtures, and where it is desirable to show connections to pumps, house tanks, filters, etc., it is advisable to prepare, on a larger scale than is ordinarily used, a detailed drawing showing the exact arrangement of all piping, together with all fittings, joints, valves, traps, etc., but where the plumbing is ordinary straight and simple work such detailed drawing may be omitted.

Specifications Should be Complete.

The specifications should indicate in the clearest possible manner the quality of the materials to be used and the method of installation. The location, size, depth, and general directions of the street sewer, if there be any, should be clearly described, and if there be no street sewer, the final disposition of the sewage should be given in detail.

The location and size of the city water main from which the water supply is to be taken should be plainly stated along with the water pressure at source of supply. This information can be obtained in any well-regulated municipality where it is always kept on file. The specification should list accurately how many of each style of fixtures are to be located on each of the floors of the building, and should give such an accurate and detailed description of such fixtures and their trimmings as to leave no room for doubt as to what is desired.

Where catalog plate numbers may be used to designate fixtures, care should be taken to use only such plate numbers as are well known throughout the trade, as the use of concealed or fictitious numbers is liable to excite a suspicion of collusion between the architect and the manufacturer or dealer whose fictitious plate numbers are used. It is sometimes advisable to state in the specification that fixtures or appliances other than those designated by plate numbers but equal in every respect, will be accepted subject to the approval of the architect, though in most cases where a well-known catalog is used such precaution is unnecessary. The similarity of designs among the various manufacturers preserves the element of competition, as where one manufacturer's design may be mentioned, and almost exact duplicate can nearly always be found in some other manufacturer's line.

U.S. GOVERNMENT SPECIFICATIONS.

The sketch on page 10 shows plate No. 1, prepared by the Board of Uniform Plumbing Specifications for the Departments of the Treasury, War and Navy of the U.S. Government at Washington, and approved by them.

Cleanout plugs for wrought-iron piping.—To be heavy cast brass screw-jointed cleanout plugs screwed in cast-iron screw-jointed fittings, as shown on Plate No. 1. Where piping is installed in chases in plastered rooms, extension pieces, if required, to be placed in tees to bring plugs flush with plaster or wainscot line. All plugs must be installed in piping in such position that same are accessible.

Where cleanout plugs occur back of marble or other wainscoting, same is to be cut so that plug will be flush with face of wainscoting.

A finished cast-brass, nickel-plated flanged cover of the required size to cover openings to be secured to each cleanout plug, covering each opening in wall of finished rooms, as shown by Plate No. 1.

Downspout nozzles.—Interior downspouts that discharge on drip stones or driveway to be fitted with finished cast-brass nozzles. Nozzle must be screwed on nipple, screwed into drainage elbow at base of downspout and extend beyond outside face of wall as shown by Plate No. 1.

Flashing connections.—Openings in roof for vent pipes, to be flashed with 6-pound lead flashing; to be flanged and made water-tight at roof, and the lead to extend up around the vent pipes to a distance of not less than 10 inches above the roof line. At top line of the lead flashing a drilled and threaded standard cast-iron or malleable-iron cap, one size larger than vent pipe, to be screwed to vent pipe to form counterflashing or rain guard, pipe to extend through cap and be provided with coupling as shown on Plate No. 1.

A special cast-iron fitting to take the place of cap and coupling may be used, providing same is a one-piece fitting that will cover lead flashing having double hub with screw threads to allow pipe to be extended if desired.

Wall hydrant.—Hydrant to have polished brass face and detachable key handle and nozzle for ¾-inch hose connection; hydrant to be of sufficient length to go through wall with shut-off

valve on inside of building wall and to [illegible] brass coupling for ¾-inch pipe, as shown on Plate No. 1.

Street washer.—The valve of street washer to be in a cast-iron box placed not less than 30 inches below the ground; from this two ¾-inch pipes will extend to surface and be connected to a cast-iron box with hinged cover marked Water, having top set level with grade. One of the pipes will be fitted at upper end with cast-brass ¾-inch hose connection with [illegible]; the other will contain a brass operating rod. Furnish with each washer a short-handle key; all wrought-iron parts to be galvanized. Street washer to be of type shown on Plate No. 1.

Fire-hose rack. — Each fire-hose connection to have a swinging fire-hose rack of the type required for hanging hose in vertical loops, secured in place and provided with 75 feet of 2-inch diameter "Underwriters" standard best quality unlined linen hose very closely woven, fitted with nozzle 12 inches long and coupling; rack, nozzle, and coupling to be finished brass, nickel plated, as shown on Plate No. 1.

Each connection to be made about 6 feet above floor and be provided with a 2-inch diameter, heavy pattern angle globe valve with renewable elastic disk and hose nipple. Valve and hose nipple to be finished brass, nickel plated.

Area cesspool.—To be extra heavy cast-iron cesspool of dimensions shown on plate No. 1, with 3-inch connection and with perforated hinged cover plate, without bell trap.

Floor drain.—To be extra heavy cast-iron combination floor drain and deep seal trap with 3-inch connection. Top of floor drain to have brass strainer set flush with floor line.

New System of Vacuum and Vapor Heating

A Description of the Vapor-Vacuum System, Showing the Economical Advantages that it Offers — Great Advance Has Been Made in Science of Heating in Late Years.

Rapid strides have been made of late years in the science of heating, despite the fact that all innovations have been made in the face of keenest opposition from old-time fitters. These adherents of the old school have looked with distrust on new ideas and improved systems and have stubbornly opposed the

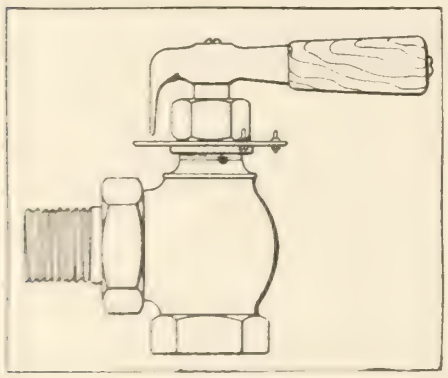


Fig. 1. Quick Opening Lever Radiator Valve.

abandonment of old methods. New ideas have been adopted by these reactionaries only when forced to do so by the fact that more progressive men have taken them up and demonstrated to the public their usefulness.

Despite the continued opposition, new features have been established with great quickness and the progress made in this particular branch of industry has been truly surprising. Six years ago vapor and vacuum heating systems were a rarity. To-day they are in use in all sections and are rapidly coming to the front.

One of the newer systems, writes Don Rex in the Plumbers' Trade Journal, which has made rapid progress in becoming favorably known to the trade is the vapor-vacuum system of the Vapor Vacuum Heating Company of Philadelphia. This system is so designed as to allow of a wide variation in temperatures, it being possible to circulate the vapor through all radiators and coils at a pressure below that of the atmosphere, or at a pressure of one, two or five or more pounds above atmospheric pressure, thus giving a considerable range of temperatures, tending to great economy in fuel, particularly in a changeable climate.

Hot Water Radiators.

The radiators used should be of the hot water type, with the supply opening at the top of one end and the return opening at the bottom of the opposite end. This is not necessary, however, as the regular type of steam radiator may be successfully employed. Personally we favor the former type for the reason that we believe the steam or vapor takes a natural course in circulating through the radiator when entering the top and passing downward through each individual section of the radiator as it cools or condenses.

Each unit of heating surface (radiator or coil) is provided with a quick-opening, adjustable lever radiator valve with a graduated supply opening, so arranged that much or little vapor or steam may be admitted to the radiator or coil according to the requirements made necessary by weather conditions, and by reason of this there is no heat wasted, as only such an amount is admitted to the radiator as will be condensed. Figure 1 illustrates this valve.

The return of each radiator or coil is connected to a system of return lines by a small union elbow constructed with a baffler hung in quite the same position as the clapper of a swinging check valve. The contsruction of this elbow is shown by Fig. 2. The air and return lines convey the air from the system (there are no air valves used) together with all

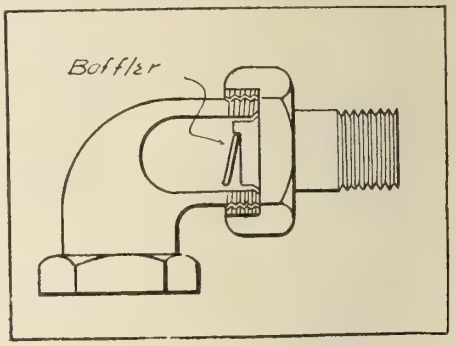


Fig. 2. Union Ell With Baffler.

water of condensation back to the boiler.

Erection of Piping..

The supply piping is erected in much the same manner as the ordinary low-pressure gravity steam job. The return from end of main may be taken back to the boiler overhead, or it may drop and be taken back as a wet return. The union baffler will allow the air and condensation to enter the return line without interference, at the same time operating to prevent the return of air to the system.

The vertical return lines connect in the basement into a main return line (air and water) running parallel with the steam main. At a point near to and above the boiler in the basement is placed the vapor-vacuum controller shown by Figure 3, and the return air lines connect to this controller by a pipe connection from the top of the air line. This controller works by expansion and is the real heart of the vacuum part of this system, and it may properly be described as follows:

"A" is an iron frame which is bolted to the joists or ceiling above the end of the air line; "B" is a valve which is operated by the expansion tube, "C" which is held rigidly in place at one end of the frame, the valve allowing the air and water of condensation to pass through freely, except when vapor or steam enters the controller, when the brass tube "C" expands and closes the

valve against the escape of the steam or vapor. The water of condensation passes downward through the opening at the bottom of the brass fitting "D," the air passing to the atmosphere through the baffler "E."

Pressure Drives Air Out.

In operating the system a pressure is developed at the boiler sufficient to drive all air from the system, after which the fire is checked and the boiler is fired only as hard as is necessary to maintaiin the required amount of vapor.

As the pressure (which has been used to expel the air) falls, the controller prevents the return of air, and the system is at once under a partial vacuum, retaining the vapor in the radi-

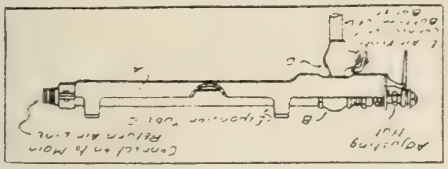


Fig. 3. Vapor Vacuum Controller.

ators for a long period and allowing the vapor from the boiler to enter without resistance, the pressure on the system being below that of the atmosphere.

Some members of the trade seem to hold to the opinion that to be successful with a vacuum job it is necessary to carry a complete vacuum on the system, or nearly so, while as a matter of fact, the smallest amount of vacuum indicating a complete absence of atmospheric pressure will produce economical results.

In order to give a better understanding of this system we show by Figure 4 a number of radiators connected to piping and boiler, which is fairly illustrative of the piping method employed. Note that the ordinary type of swinging check valves is used on return lines near to the return openings of the boiler.

Essential Features.

A compound vacuum and pressure gauge and a safety valve of the spring pop variety, absolutely tight, are essential features in the way of boiler trimmings, and, as would be the case with any other vacuum system, great care should be exercised by the steam-fitter that the piping is erected in such a manner that all joints are tight and that there are no traps in it.

In erecting the job all steam mains should pitch from the boiler 1 inch in each 10 feet of length and all air and return lines should pitch toward the boiler 1 inch in each 10 feet of length. All small piping should be reamed.

All return connections from radiators should be ½ inch in size and all of the horizontal branches of the air and return line should be ¾ inch, the size of the main air line being proportioned according to the size of the job. All branch connections, both flow and return, should be taken from the top of the main.

The detail shown by Figure 5 will perhaps indicate more clearly the manner in which the pipe connections are made to the controller and boiler.

The advantages of using this system are that it is simple both to erect and operate, and the results obtained are positive and satisfying.

Don't Become a "Back Number."

Again we wish to say to the fitter that if you would keep up-to-date and not become a "back number" it is necessary that you remain constantly in touch with and have an understanding of the later ideas in vapor, vacuum and accelerated heating.

In estimating the radiation necessary for use with this system it should be figured on the basis of a good low-pressure steam job. The fact that it may be used as a purely vapor job, circulating the vapor under a vacuum, or as a low-pressure steam job with from one to five or more pounds pressure means a variation of temperature of normally 150 degrees or less to 220 degrees or

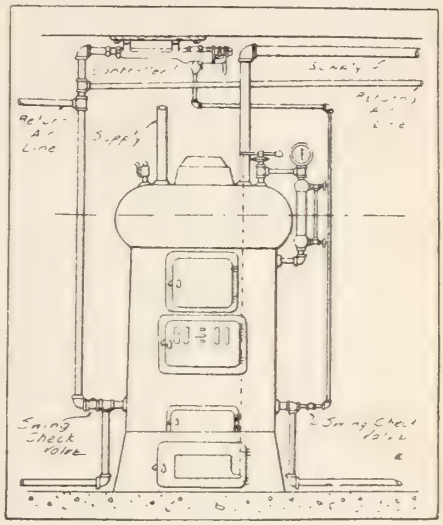


Fig. 5. Pipe Connections to Controller and Boiler.

more, and thereby makes the use of an excessive amount of radiation unnecessary.

In our next article we shall describe and discuss another of the later systems.

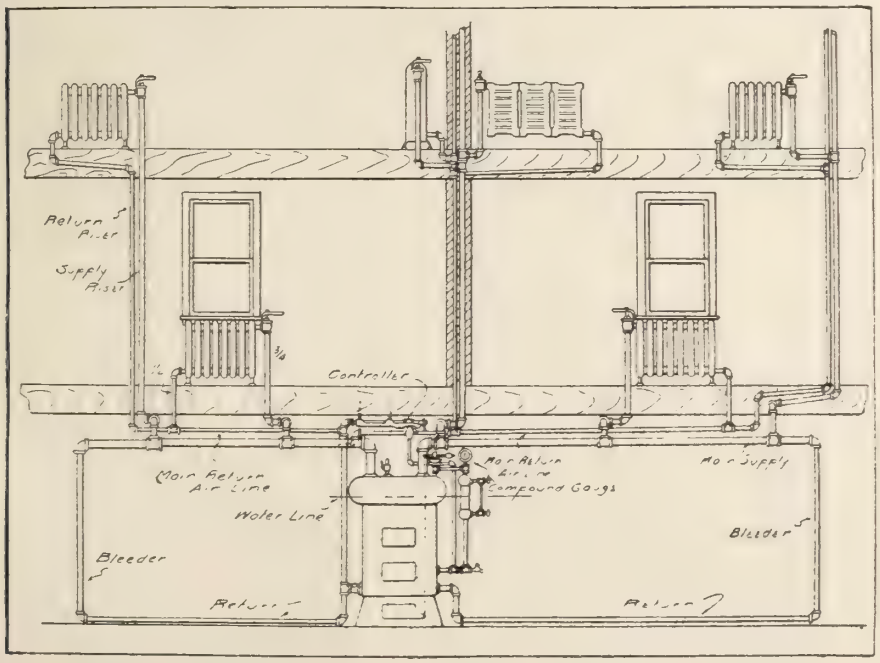


Fig. 4. Vapor Vacuum Heating System Showing Details of Construction.

OPINIONS EXPRESSED REGARDING DURHAM SYSTEM.

Continued From Page 9.

the alteration of the processes of pipe manufacture to meet the requirements found necessary according to the conditions.

The system is used only in large buildings, because of the advantages it offers in such work. The folly of this restriction, however, is apparent for if its life is so short, under sanitary conditions, in large buildings, where numbers of people aggregate daily, it would be a more serious menace to the public health than the instalation of the system in a private dwelling place, where the defective points of the system could easily be detected and reached.

MAY BUILD NEW PLANT.

The American Radiator Company, Chicago, are planning to enlarge their trade in Canada, and sites at Toronto and Montreal have been looked at with a view to erecting a new plant to take the place of the premises now occupied at Brantford. It is also said that boiler and radiator plants at Toronto and Montreal have been looked over with a view to purchasing.

The Folly of Price Cutting---A Possible Remedy

Slashing of Estimates Below the Point Where a Contract Will Pay is Due Chiefly to the Lack of Business Acumen Displayed by Many Plumbers—Cases Quoted to Show the Folly of Such a Course.

The plumber is regarded by many as a master of extortionate charges. He is depicted, sometimes in a facetious mood though more often in earnest, as a regular "hold-up man," wringing immense profits from the pocket of the public. He is, in fact, assumed to be the very ablest of all tradesmen at figuring prices and making a maximum of gain out of the smallest work.

This conception is absurdly wrong. Too many plumbers are the very opposite. Instead of taking the largest possible profit, they are prepared to accept work at any old figure provided that by so doing they are beating some other plumber out of it. Cutting prices is so common that it is hard for the plumber to-day to charge a price which will allow him a living margin of profit.

Price cutting is due to two causes; first, imperfect knowledge on the part of the plumber or unbusiness-like methods which lead him to figure wrongly and, second, his desire to beat the other fellow.

Too many men do not figure a job out on a sensible, business-like basis. They do not seem to realize that other things must be considered besides the cost of labor and material.

"I know dozens of men," said a representative Toronto plumber, in discussing this phase of the question," who figure out a contract this way. So much for the material, so much for labor, plus a certain percentage for myself—say ten per cent. They do not consider that a man has his business charges to meet, his overhead expenses. He has store rent, light, heat, business tax and many other costly details to make up. Each job taken must contribute so much toward overhead expenses. The proper way, then, to figure is to total up cost of material, labor and a just proportion of the regular expense of business upkeep. Then add the ten per cent. for profit—or whatever per cent. you think fair—and you will know how much the job should be worth. The other way the whole expense of running the business comes out of the percentage charged for profit and, in many cases, practically eats it all up."

How to Figure Labor.

The question of figuring the cost of labor so as to be fair to both your customer and yourself is a difficult one. Too many plumbers figure that a job [illegible] done in certain time. Every piece of work presents some difficulty and there is always the chance that something will arise to upset all calculations. The job may take longer than was expected and, if the price has been figured too closely, the plumber may lose money on the contract through the difference in the cost of labor.

Most men depend on the results of their experience to determine labor charges. Another method is to reckon labor on a basis with the cost of material. If the material costs $100, charge up a certain percentage of that for labor.

"I charge 40 cents labor for every dollar of material, said a Toronto plumber," and I find that it works out pretty evenly all around. I used to reckon on a man taking so long to do a certain piece of work and just figure it at that. But there is this to be considered. The more expensive the goods being put in, the more careful a man has to be at his work. It takes longer to do a high-class job than a cheap one and, unless you reckon that, you stand to lose."

This system is used by a number of plumbers. The percentage charged varies from 35 to 40, while some believe even higher should be asked.

Plumbers Too "One-Sided."

Mistakes in figuring on a job are due to the plumber, in too many cases, being a "one-sided" man. He has devoted all his attention to the practical end of the work, believing it to be the only essential one. After he has mastered his craft, the plumber thinks that he is fully qualified to go into business. He does not consider that a shrewd business sense and a thorough knowledge of approved methods are necessary adjuncts. Apparently he thinks that, if he can get out and do the work, the business will run itself.

Why Men Fail.

Many a splendid workman has made a complete fai'ure on going into business for himself. The reason has almost invariably been a lack of business acumen. He has learned only how to do the work, not how to figure what it costs him. Perhaps also he has not learned how to buy.

A case is recalled where a middle-aged journeyman started up in the east end of Toronto on his own hook a few years ago. He was an adept workman himself—neat, quick and handy. He had many friends and had no difficulty in getting plenty to do. The quality of his work was such that it widely recommended him and his business increased. He seemed, in fact, in the very hey-day of prosperity. And yet he failed with a heavy indebtedness, after being in business about a year.

Enquiry elicited the information that he had charged for his work about the same price that other plumbers asked. On the surface he seemed to have been setting his prices right, but it was quite evident there had been a leakage somewhere.

Cannot Use Others' Figures.

The trouble lay in the fact that he had figured contracts on what he knew to be the prices asked by competitors, irrespective of the condition of his own business. Not being a practical business man, he had allowed his overhead expenses to mount up, he bought "not wisely but too well," and through his almost excessive neatness and particularity was liable to take a longer time over a job than others. He simply could not afford to figure as closely as his more shrewd and quicker competitors. By blindly striving to do so, he had gone to the wall.

Had that man taken the pains to acquire a practical knowledge of the business, look closely after his buying and had known enough to charge according to the quality of his very superior work, he might perhaps be thriving and prosperous to-day.

It is the uninformed plumber who is chiefly responsible for the indiscriminate price-cutting, unfortunately so prevalent. A man who understood his business thoroughly could not help but realize the folly of such a course. It is in a great many cases a newcomer who does the most determined slashing. Too often the newly launched master plumber harbors the idea that it is better to start out by going after a lot of business on a slim margin than to be content with less work on a larger margin. Volume of trade, not quality, is what he strives after. Before the idea has been knocked out of him by the bumps of adversity, he can frequently do not only himself, but the trade generally a great deal of harm. The rashness with which men will plunge in is shown by the heavy indebtedness of several plumbing firms which have failed of recent years.

"I could easily name half a dozen bright young fellows who have not made a success of business," said a master plumber the other day. "They entered business thinking that a kit of tools and the knowledge of how to use them was all that was necessary. They did not think it necessary for a man to have business brains and know how to use them. They were all price-cutters—simply because they did not understand how to figure or just as often because

they were careless and did not consider every phase of the work. And they are all back in the ranks again now. Without exception, they were good workmen, and to a certain extent ambitious, but they started wrong."

The Deliberate Price Cutters.

Then there is the class who knowingly cut down their prices, in order to beat out all competitors. The folly of this course is patent to wise members of the craft, but there is no way of preventing it.

No plumber who took the trouble to look ahead—or to look back—would pursue this course. Consideration of past work would show that it does not pay to get a lot of contracts at a slim margin. In fact, the more work of this kind you get, the more you lose. It would in most cases pay a man to let a job go than to take it at a very low figure, because it prevents him from undertaking work of a more profitable nature during the time consumed. By looking ahead, the cutter will see that he is literally ruining his own future by cutting his prices so low that it will be impossible either for himself or anyone else to make a decent profit on future work. Quality of business from every standpoint is preferable to quantity, if quantity means price-cutting.

A Practical Instance.

Yet some plumbers will cut their figures to the bone, disregarding all wiser considerations. Sometimes they repent. One of the reformed class, who has come to see the error of his ways, makes the following frank confession to Plumber and Steamfitter:

"Last year I decided that my business was not large enough. I wanted to branch out and do things on a larger scale. I started to cut prices down below what I knew should be charged. Still I figured it out that if I got custom, even at a loss, it would build up my business and make bigger profits for the future. Well the work came my way all right; I had never been so busy before. But at the end of the year, when I came to figure up my books, I found that I had $500 less to my credit than I had had on starting the year. I had been losing money fast and working twelve, fourteen and sixteen hours a day to do it. The worst feature of it all was that I had been prejuducing my own chance of getting a decent price in future. When I figure on a job now, people say: 'But you did it for so-and-so last year for less than that.' I tell you, I have reformed. Price-cutting is a losing game in every way."

It is a noteworthy fact that most of the cutters are in business on a small scale. The natural inference is that they are kept down by their own foolish methods. It is seldom that a plumber with a decent paying business is found to ever accept work at less than it is worth to do it. Some of the big firms figure more closely than smaller competitors, but their improved buying facilities and reduced expenses in proportion to the volume of work done make this sometimes possible. But it is not possible to point out a single case where a firm has reached this position by deliberate price slashing methods. It has got there by sane methods of business.

Where the Remedy Lies.

The remedy lies in the plumbing fraternity generally acquiring a broader insight into their business. If every master plumber knew exactly what it cost him to carry on his shop and how much he had to make to continue in the trade, there would be no more price-cutting.

One of the surest methods of reaching this happy condition of affairs is to get the plumbers more closely associated. To meet others in the trade is to pick up ideas and acquire new viewpoints. In no other way can the folly of deliberate slashing to meet competition be so effectually displayed as by the members of the craft meeting on a common, friendly footing to become acquainted and talk over trade conditions.

TWO NEW BOOKS.

J. J. Cosgrave, author of "Principles and Practices of Plumbing," which has been adopted as a text book in 30 of the largest universities in America, "History of Sanitation," and other books on plumbing subjects, is the author of two new works which have just been put on the market by the publishing department of the Standard Sanitary Manufacturing Company, Pittsburg.

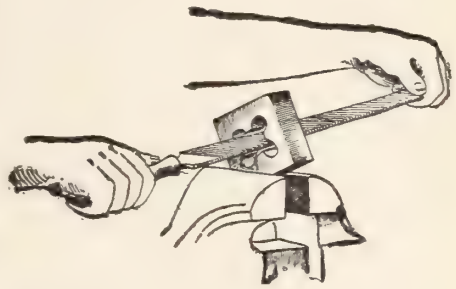
The first of the new books is "Plumbing Estimates and Contracts," a handsomely bound book of 203 pages, divided into three parts, Estimates, Contracts, and Business Law. The first section deals with taking off the quantities and making the estimates from plans and specifications, and urges care in including items which are frequently overlooked. Some valuable suggestions are also given as to how to calculate the costs. The chapter on contracting deals with the financial end of the business, office methods, care of catalogues, execution of contracts, supervision of work, system in keeping track of time and material, the analysis made by the author being very thorough. In the third section of the work the law of contracts is gone into very fully, incidental reference being also made to the law on insurance and leases.

"Plumbing Plans and Specifications" is supplementary to "Principles and Practices of Plumbing," but it is considerably larger, having 267 pages. Where the latter work explained how work should be done the new book explains how to indicate the work on plans and describe it on the specifications. It is divided into four parts, the first urging a uniform system of making the plans with symbols which will be generally understood. Part two describes the preparation of plans and detail drawings, and part three suggests a working specification which can be altered to suit various cases. In the fourth section the plumbing requirements of different types of buildings are explained.

Both books are valuable additions to plumbing trade literature, and should be added to the library of every practical plumber. Each retails at $3, and can be obtained in Canada at the publisher's price from the Technical Book Department of the MacLean Publishing Company, 143-149 University avenue, Toronto.

HOW TO SHARPEN A PIPE DIE.

I discovered a short time ago that a mill-cut file would sharpen a solid pipe die quite easily and quickly without removing the temper in the die. The first few rubs of the file will slide without cutting, this being due to the grease on the die. Just as soon as the greasy surface is thoroughly worked off, the file will commence to cut, and will cut very



Sharpening a Pipe Die With a File.

smoothly, making a keen edge on the cutting thread. Heretofore I have always worked on emery grinders to try to do this work without removing the temper of the die, but found they worked very slowly on account of the small diameter of the wheels, also that it was quite a nuisance to set the die for the cutting wheel. Most mechanics would not try the file, not having the least idea that it would do the work. That was my case.—A. F. Bishop in Scientific American.

The Question Box

Subscribers are Urged to Send Questions to be Answered, or to Comment on Letters Published. .Descriptions of Jobs Done or Shop Kinks are Also Invited.

FIRST COST NOT FINAL.

Editor Plumber and Steamfitter. — I am an occasional reader of your interesting paper and have a question that I would like to have you say a few words upon in the next issue. In a recent bidding contest for a plumbing job in a town that I know of, the bids were quite dissimilar and the party who had the job to let gave it to the higgest bidder. There was a difference of some twenty per cent. Now, what I desire to know is, why this difference in the price and if a lower priced man would not have put in just as good a job?

Berlin, Nov. 22. L. O. R.

The difference in the amounts of the bids may have been due to the very anxious frame of mind of some of the contractors who were dead willing to do the work for the sake of keeping on the move. There seems to be plenty left, yet, who are so constructed. It also may have been due to ignorance in the matter of making the estimate. Quite frequently men who are supposed to be well up in the business will differ almost to that extent in a bid of some size.

We do not believe in low priced work. It does not give the mechanic a fair chance to show what he can do. We are speaking of the work now and not the goods.

Cheap goods are always the dearest in the long run, and the bill for repairs will more than balance the difference in the first cost of the goods. This has been shown in almost every town in the country. So, upon considering the matter, we believe that the party to whom you allude did much the wiser thing when he (or she) gave the job to the man who put a good price upon his estimate. Probably he had money enough in the job so that he could afford to make it a good one.

We will venture to say that the owner's bill for repairs for the next few years will not amount to much.—D. C. H.

A NEEDLESS EXPENSE.

Editor Plumber and Steamfitter.— One of the men with whom I have been having a talk, spoke of putting some kind of a contraption under the different fixtures to guard against any leaks. I believe that he said it was called a safe. Is it necessary? J. B.

Toronto, Nov. 20.

The party that told you such a tale of woe must have been an old style plumber. Such practices were usual some years ago when the different fixtures were not as reliable as they are to-day. The perfection to which the appliances have arrived at present makes the use of such safes unnecessary. A good plumber will put in his work so that it may be seen and he will not have any pots or pans or safes standing around to catch the leaks either, for when he gets the job done, there won't be any leaks.—D. C. H.

CHEAP SINKS A NUISANCE.

Editor Plumber and Steamfitter,— From what your observation and experience has taught you, what would you say was the most practical kind of a sink to install in the average house of the day? M. M.

Brantford, Nov. 25.

All things considered we believe that we would favor the porcelain enameled. While another party might differ, we believe that the kind we mention will give much better satisfaction, remain more sanitary, look better and last longer. This fixture is one of the most used and most abused in the whole house and it should be of the very best in order to stand the usages to which it will be subjected.—D. C. H.

LOCKERS IN BATH ROOM.

Editor Plumber and Steamfitter,— Do you think that it would be a good plan to have a number of drawers and lockers in the bath room. Please advise as I have the matter under serious consideration. P. W.

Winnipeg, Nov. 17.

If you contemplate using that bath room for a storehouse we should surely advise you to put in all the drawers and lockers that can be crowded in. We recently saw one where a series of lockers were installed as high as the ceiling. One would have had to take a step ladder to have gotten into the lockers. A bath room is a place made for certain purposes and not intended as a repositary for all the odds and ends of household life that can't be put away anywhere else. A medicine closet and perhaps a couple of drawers for towels are all that we should consider necessary for the ordinary bath room. It has been our experience that the more room you afford for "catch alls' the more will accumulate.—D. C. H.

BOILER COVERING.

Editor Plumber and Steamfitter,— I find that men have some difficulty in making the asbestos stick sometimes when they are covering the boiler and if you or the practical man can give any helpful suggestions, I would be very glad to read them in an early issue of the paper. V. M.

Montreal, Nov. 24.

Probably the asbestos does not stay in place because it has been improperly mixed. Many who use it seem to be afraid of getting it too wet. It should be thoroughly wet up for at least twenty-four hours before it is to be applied. Some people cover the boiler with wire netting before applying the asbestos. Personally, the writer has always regarded this as admitting that the mechanic did not know how to handle the asbestos. In applying the asbestos, do not try to put it on in one coat. Three are much better. The first one is very thin. Merely little dabs of the material thrown on. The second coat should bring out the form of the boiler and be pretty nearly all (as regards thickness) that is to be applied. Put a little Portland cement in the finishing coat. It will give a much better and harder finish. The last coat need not be over a quarter of an inch thick. If some pains is taken in applying the material after the manner of the directions given we believe that good results will be attained. The best results are attained by applying the asbestos when the boiler is heated up. If it is quite hot, when the second coat is applied, it may be found necessary to slice into the asbestos in several places to let out the steam or else the covering will bulge and leave a hollow space or perhaps drop off entirely.—D. C. H.

Electrical Work a Paying Department

Many Plumbers Handle Lighting Fixtures and Do Wiring as Well—Some Practical Hints —Precautionary Measures to be Remembered.

In recent numbers Plumber and Steamfitter has paid some attention to the question of plumbers dealing in lighting fixtures. Considerable interest has been displayed in the subject and many plumbers who had not previously given the matter thought, are now considering the advisability of carrying fixtures for both gas and electric lighting.

Some large plumbing establishments carry an electrical department with competent electricians to do all that class of work. This has invariably been found a profit paying venture, as it gives complete control of the lighting situation. In small places, or where the business of a firm would not warrant the carrying of an electrician, the next best thing would be to have a connection with an electrical firm or a man doing that class of work so that business could be accepted and the wiring of a house turned over to the auxiliary help.

Works Both Ways.

A representative of Plumber and Steamfitter called on a number of Toronto plumbers and found that they were thoroughly satisfied with the results obtained from the fixture trade. "It works both ways," said one man. "We get lighting work through our plumbing connection, and we get plumbing work through our handling of lighting fixtures. The two work together naturally."

That the same results would be obtained in smaller places is a reasonable conclusion. In fact, the smaller the place, the better the business should be insomuch as competition in lighting goods would probably not be as keen in a proportionate degree.

Some Useful Suggestions.

In installing fixtures some practical hints should be borne in mind. For instance, in electric wiring, joints should always be soldered. It is a fact that electricians, through lack of proper facilities, are frequently neglectful of this precaution. As building inspectors do not carry their investigations to the extent of tearing out fixtures to see if the joints have been soldered, this neglect generally goes undetected. If the work were done by a plumbing firm the soldering would certainly be attended to. Here, by the way, is a talking argument for the plumber in canvassing for lighting work. He can promise the most careful and thorough attention to precautionary details.

In hanging a light from a ceiling, insulation should always be placed between the ceiling and the canopy, particularly if the former is of metal. Otherwise a short circuit may be established some night when the family is at dinner and Brown & Co. will lose a good customer.

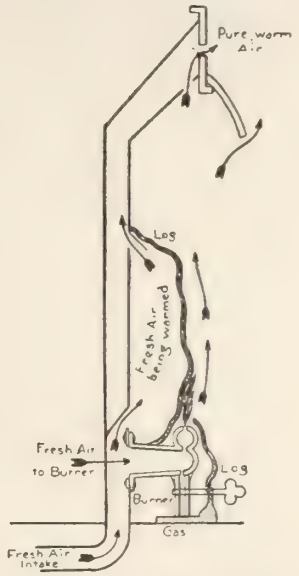
An Electric Fixture for Living Rooms Recently Put on the Market.

Some handsome new designs in fixtures are being placed on the market for the Christmas trade. One particularly attractive design is a large electric lighting fixture for parlor or drawing room. It is suspended a short distance only from the ceiling and the central light is surrounded by glass prisms three feet in length. Suspended around the main light are a number of smaller ones with prisms of correspondingly less length.

In gas fixtures the tendency in new lines seems to be toward inverted burners. This gives a somewhat similar appearance to the electric bulb and seems to be meeting with increasing favor.

FRESH-AIR GAS GRATE.

A portable gas grate, which takes its air from out of doors, instead of from the room in which it is located, is being placed on the market by a California concern. This is accomplished by means of a fresh-air intake communicating with the air out of doors, and the result is almost perfect combustion without robbing the air in the room of its oxygen.



A Fresh Air Gas Grate.

An idea of the construction of the grate may be gained from the drawing. The waving line above the blaze designates the gas logs. Part of the air drawn in through the intake passes to the burner and comes out around the gas logs as hot air. The other part passes up inside the logs, is warmed, and passes out through a vent near the top of the grate above the logs.

STANDARD PRACTICAL PLUMBING

"Standard Practical Plumbing," by R. M. Starbuck, a new book of 450 pages, 347 illustrations and 30 chapters, is an exhaustive treatise on all branches of plumbing construction, drainage, venting, ventilation, hot and cold water supply and circulation. It is a book which ought to be in the library of every master and journeyman plumber, it being written in clear, understandable style, and all the illustrations being especially designed for this book. Each of the 30 chapters deals with some particular branch of the trade, beginning with the tools to be used, soldering, wiping joints, etc., and carrying the student right down to the most skilled work, and the treatment of the theory of plumbing, and the style of drawing essential to the plumber. The book sells at $3 and can be had in Canada from the Technical Book Dept. of the MacLean Publishing Company, 143-149 University avenue, Toronto.

GOSSIP OF THE TRADE

The finance committee of Regina has sold two civic lots to the Regina Plumbing and Heating Co.

The Taylor-Forbes Company was the first Guelph factory to use Niagara electric power.

There is talk of all builders' trade employes, including journeymen plumbers, uniting in Toronto into one body.

Deegan & Co., Port Arthur, have received the plumbing contract for the new Nelson Block, Cumberland St.

David Courville, Alexandra, is the successful tenderer for the heating by steam of the Sacred Heart church. The system must be in running order by the third week in December.

In connection with the construction of a buoy depot at Prince Rupert, B. C., a schedule of current wages and hours will be instituted. Plumbers are to get $5.50 a day, the highest paid to any class of workmen.

S. P. Gourlay, St. Catharines, has received contracts for the plumbing and heating of the following factories and offices: Steel plant office, Chipman-Holton mill, H. S. Peters factory and Hamilton Tube works.

E. P. Fletcher, Calgary plumbing inspector, says the trade has been busier there than ever before. There are now 23 master plumbers in the city, and 115 journeyman. Last year only 50 journeymen were employed.

Local 46 of the Plumbers, Steamfitters and Gasfitters' Union, Toronto, is holding a series of educational meetings on the second Friday of each month. Addresses are to be delivered at each meeting on some phase of their work.

It has been suggested that, in order to increase the membership of the Toronto Master Plumbers' Association, each member make it a point to get one other man to join. This, combined with the monthly social evenings, should have the desired effect.

A conference was held between the master plumbers and journeymen in Port Arthur on Nov. 18. The men, who had been getting 40 cents an hour, asked for 60 cents. It was finally decided to fix the scale at 50c, and the threatened strike has been averted by this compro-

Extensive alterations will be made in the heating apparatus of the Frederic the city buildings. The boiler, after twenty-five years' service, is still in first class condition. The trouble lies in the piping. The steam pipes are laid next to the brickwork, and much heat is lost in that way. A modern system would reduce the cost of heating the building by one half.

S. P. Gourlay, St. Catharines and Welland, recently advertised for a steamfitter, and among the replies was one well worth reproduction. It read: "I write you this note to ask if I have a chance for your job as a steamfitter, having worked seven at it at all kinds of engines and made all kinds of joints and fixed up all kinds of machines and if I get your job I will come on the next day. I will draw to a close now hoping to hear from you soon." It was dated from Galt, but no signature was appended

Dunnville, Ont., council has put through a by-law regulating plumbing there, specifying what materials must be used and their size and weight, and providing for the construction of all necessary traps and vents. It also requires every plumber having a place of business in the town to take out an annual license, at a cost of $10, non-residents to be charged $25 for the same privilege. The Town Engineer or some other person appointed by the Council for that purpose must inspect all plumbing work and, when found satisfactory, give a certificate to that effect; if it is not found satisfactory, it must be made so at once, under penalty.

A PLUMBING SUPPLY BAND.

Reminiscent of the master plumbers' convention, held in Toronto last September, the accompanying photograph has been sent to The Plumber and Steamfitter by one of its friends amongst the traveling fraternity. It depicts the German band, which was organized by the exhibitors, the instruments being articles familiar to the plumbing trade, and upon which music is played every day. Amongst those who can be seen in the picture (and there were several whom the camera refused to take) were (from right to left): C. H. Bakemeyer, Canadian Wolverine Co.; T. H. McLaren, Canadian Brass Mfg. Co.; W. H. Darling, Canadian Wolverine Co.; a man who

A "Hot Air" Band.

was introduced as "Mr. Glenister"; S. T. Hadley, James Morrison Brass Mfg. Co., and S. Cruickshank, National Plumbing Supply Co.

FIRST SOCIAL EVENING HELD.

The first of the fortnightly social evenings arranged by the Master Plumbers' Association of Toronto was held on Thursday, Nov. 17, and was so enjoyable that it will undoubtedly prove the first of a series of equally successful gatherings. The entertainment committee had spared neither time nor expense in making arrangements, and they promise that equal attention will be paid to all socials held during the coming winter months.

Progressive euchre was played during the first part of the evening. When the last game had been finished, it was found that F. A. Cowan had won with a good margin, only one defeat being credited to him. The consolation prize was taken by H. Stevenson, whose score showed a clean sheet. Some keen games were witnessed, and most of the players showed that they were in to win. For those who did not play cards, checkers and dominoes had been provided.

At eleven o'clock supper was served, A. F. Passmore and G. F. Frankland be-

ing in charge. Not only did this worthy pair serve as waiters most efficiently, but they had between them concocted a brew of coffee which would have done credit to the most experienced chef. The board was covered with a liberal supply of edibles, and it is hardly necessary to state that fullest justice was done.

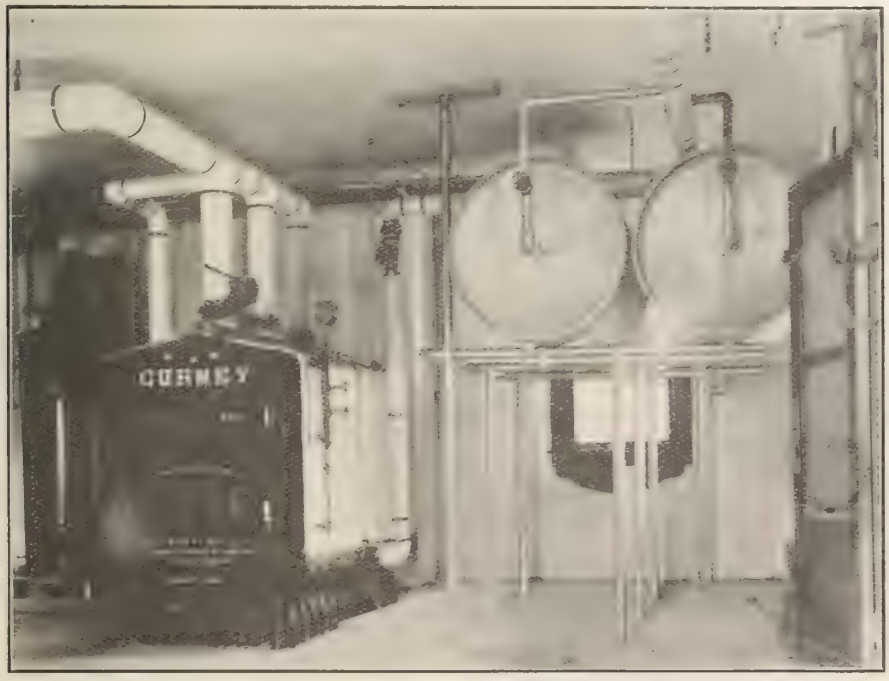
A few after supper speeches were made, President Cooper leading off with a few remarks tending to encourage the members to improve further the membership of the organization. Other speakers were E. M. Trowern, secretary of the Retail Merchants' Association. T. B. Costain, of Plumber and Steamfitter, and D. McMullen, who gave some practical advice to fellow plumbers. The meeting broke up with a vote of thanks to the entertainment committee.

The Toronto Master Plumbers' Association met Friday night, Nov. 25, in the R. M. A. hall, President Cooper in the chair.

Chairman Passmore of the entertainment committee gave a report of the first social held, and announced that the next would come on Friday, Dec. 2, when a surprise was promised.

AN INTERESTING INSTALLATION.

The accompanying picture shows a nice piece of work done by the Western Plumbing Co., Lethbridge, Alberta, in the new sanitarium at Frank, Alberta. The two tanks are used for hot, sulphur water and hot soft water, they being supported on a framework of piping connected to the tanks. Metals, Limited, Calgary, supplied the plumbing and heating material.



Sulphur and Soft Water System Installed in Sanitarium at Frank, Alberta.

New Buildings, Water and Sewerage Systems

Opportunities Offered by Municipalities and Private Enterprise for New Plumbing, Heating, Ventilating or Sanitary Systems—Work Being Undertaken in Every Section of the Dominion.

Municipal Undertakings.

Roleau, Sask., is raiing $15.000 for waterworks.

Ottawa laid water mains in 1910, costing in all $48,208.

Biggar, Sask., will expend $15,000 on fire protection and waterworks.

Victoria ratepayers will vote on a by-law to raise $50,000 for a new fire hall.

Boissewan, Man., will expend $5,000 for a new heating system for the town hall.

Pembroke ratepayers will vote on a by-law to raise $65,000 for waterworks extension.

A by-law for $700,000 for a waterworks system will be submitted in Victoria, B. C.

Penticton, B. C., has carried a by-law to raise $20,000 for street improvements and drainage.

Thos. Jackson & Son, Winnipeg, have been awarded the contract for sewer pipe, for $10,398.

Marmora, Ont., ratepayers will vote on by-laws to issue $20,000 for the purchase of an electric light plant, and $10,000 to build a sub-station for the lighting system.

Sydney Mines, N. S., will borrow $14,000 for water extensions, and to purchase a steam roller for street purposes.

Winnipeg ratepayers will vote on a ten-million dollar by-law to provide a permanent water supply.

Montreal plans to expend the following amounts next year: For the enlargement of the waterworks, $1,000,000; for a filtration plant, $1,500,000; for execution of public works $4,500,000; for a municipal lighting plant, $1,000,000; for underground conduits, $1,000,000; for working capital, $1,000,000. Total, $10,000,000.

Public Buildings.

The new postoffice at Brandon, Man., will cost $30,000.

Citizens of Cranbrook, B. C., want a new city hall, to cost $15,000.

A Salvation Army citadel is to be erected in Ottawa.

A Scandinavian College is being erected at Camrose, Alta.

A new theatre, to cost $65,000, is to be erected in Vancouver.

The site has been chosen for a new drill hall at Victoria, B. C.

A $50,000 Carnegie library is to be erected at Moose Jaw, Sask.

A new Roman Catholic church is to be built at Armstrong, B. C.

A new Presbyterian church is being erected at Wainwright, Alta.

A by-law will be submitted in Estevan, Sask., for a $25,000 hospital.

BOUGHT SITE AT LACHINE.

Steel & Radiation, Limited, who, it is understood, recently made an offer for the Warden King Company's boiler plant and business at Montreal, have purchased a site of about twelve acres on the Lachine canal, just outside Montreal, and plans are now being prepared for a large foundry, etc., in which they intend manufacturing boilers, radiators and expanded metal.

This is in line with the announced policy of the company, to buy or establish plants in the leading centres, where heating apparatus and metal building supplies can be manufactured economically, and savings made in transportation charges on finished products.

TO OPEN HAMILTON BRANCH.

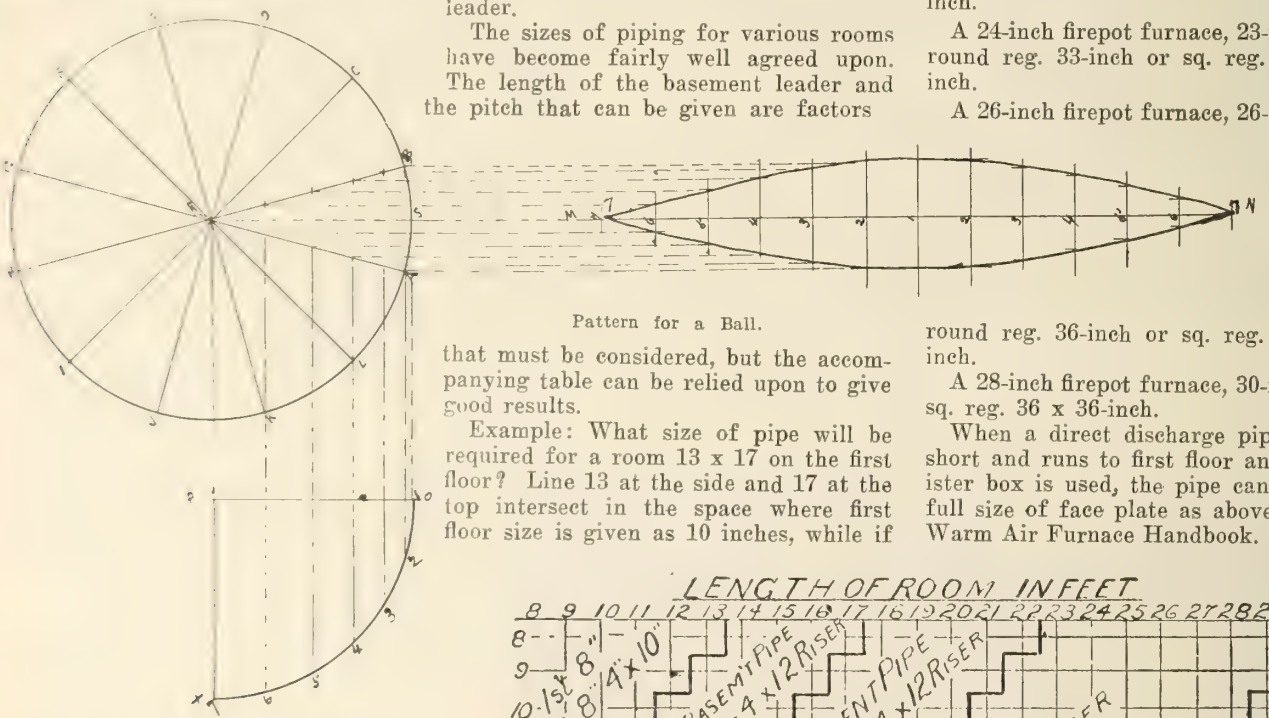
The Standard Sanitary Company, Toronto, have decided to establish a branch of their jobbing business at Hamilton for the convenience of their customers in Hamilton and the Niagara Peninsula. The new branch will be under the direction of W. A. Porter, manager of the Toronto branch, the Hamilton business being conducted as a sub-branch. A definite site has not yet been selected for the warerooms.

Cutting Patterns in the Tin Shop

Readers of Plumber and Steamfitter are Requested to Make Use of This Department—Questions Regarding Patterns Will be Answered by Experts—Discussion is Also Invited on Any Matter Pertaining to the Tin Shop.

PATTERN FOR A BALL.

To construct a ball in any number of pieces the shape of gores, draw a circle of a size corresponding to the size of ball required and divide into any number of pieces as shown by A, B, C, D, E, etc. From the centre draw radial lines as shown by R.A. RB, R C, etc., representing the gores or mitre lines. Construct a section to one side or other to use as profile from which to obtain a stretch-out, as shown by P O X. Divide section into any number of parts as shown by small numbers and drawing lines at right angles to the line P O, cutting the mitre lines A, R, B. Continue the centre line R S as shown by M N and lay off the stretchout obtained from the section or profile. Through the points draw measuring lines. Place the T-square parallel to the stretchout line and bring it against the points in the mitre lines A R and B R, cut corresponding measuring lines as shown. A line traced through these points will give the pattern of a section. The sections should be raised slightly. W. J. R.



Pattern for a Ball.

SIZES OF FURNACE PIPING.

Under favorable conditions one square inch of capacity of warm air pipe will heat from 20 to 35 cubic feet of space. A quick way to figure is that one square inch cross section area of warm air pipe will heat, in dwelling rooms, one side exposed, 23 to 28 cubic feet; two sides exposed, 20 to 25 cubic feet; three sides exposed, 15 to 20 cubic feet; bath rooms, 18 to 25 cubic feet; stores, 40 to 50 cubic feet; churches or halls, 50 to 100 cubic feet.

Add 10 to 20 per cent. for extreme exposures, add 1 per cent. for each degree below zero.

Careful consideration should be given to existing conditions, such as thickness of walls, construction of buildings and length of pipes.

The upright pipes to the second and third floors can be one-quarter to one-third smaller for rooms of equal size than those for the first floor, on account of the increased velocity in vertical pipe. When round pipes cannot be used the thickness of the studding and distance between centres usually limit the area of vertical stacks to sizes ranging from $3\frac{3}{4}$ x $10\frac{1}{2}$ to $3\frac{3}{4}$ x $13\frac{1}{2}$. In practice it has been found that a room which on the first floor requires a ten-inch leader pipe to heat it can on the second floor be heated by a riser of one of the above sizes, and an eight of nine-inch basement leader.

The sizes of piping for various rooms have become fairly well agreed upon. The length of the basement leader and the pitch that can be given are factors that must be considered, but the accompanying table can be relied upon to give good results.

Example: What size of pipe will be required for a room 13 x 17 on the first floor? Line 13 at the side and 17 at the top intersect in the space where first floor size is given as 10 inches, while if the room had measured 13 x 19 a 12-inch pipe would have been required.

For second floor measurements the first figure is for the basement pipe, the second the riser. It will be noted that an 8-inch pipe is the smallest size recommended in any work.

For third floor conditions extend the second floor riser one size smaller.

When the furnaces are set to heat one large room—for instance, school room, public hall or church—and when one register is placed directly over the furnace, and the whole capacity of the furnace passes directly through the register, there being little or no friction from the hot air pipes to overcome, quite a percentage can be added to the capacities given. When but one register is used the following sizes of warm air pipes and registers are recommended, in all cases being used without valves:

A 16-inch firepot furnace, 14-inch pipe, round reg. 20-inch or sq. reg. 14 x 22-inch.

An 18-inch firepot furnace, 16-inch pipe, round. reg. 24-inch or sq. reg. 18 x 24-inch.

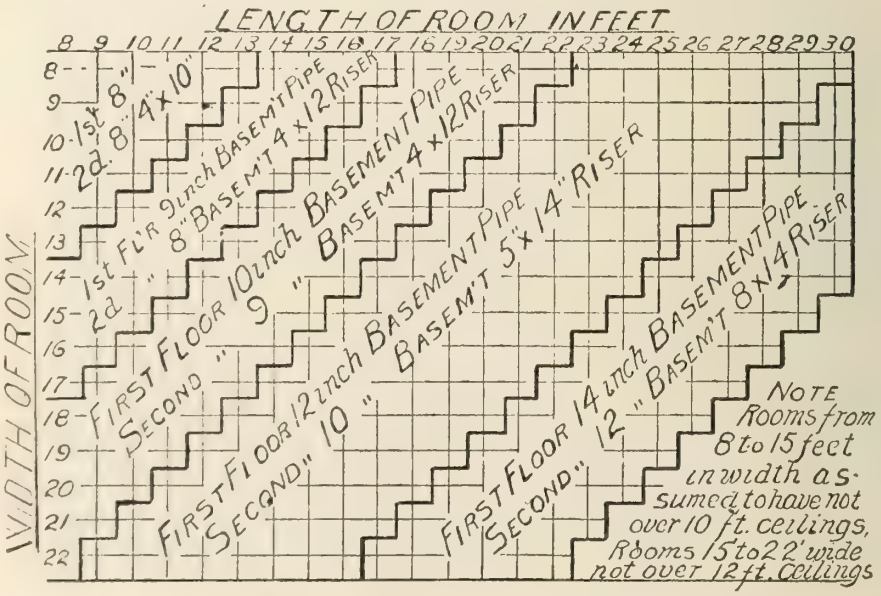
A 22-inch firepot furnace, 20-inch pipe, round reg. 28-inch or sq. reg. 24 x 27-inch.

A 24-inch firepot furnace, 23-inch pipe, round reg. 33-inch or sq. reg. 24 x 36-inch.

A 26-inch firepot furnace, 26-inch pipe, round reg. 36-inch or sq. reg. 28 x 36-inch.

A 28-inch firepot furnace, 30-inch pipe, sq. reg. 36 x 36-inch.

When a direct discharge pipe is very short and runs to first floor and no register box is used, the pipe can be made full size of face plate as above given.—Warm Air Furnace Handbook.


LENGTH OF ROOM IN FEET
8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
WIDTH OF ROOM
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
1st 8"
2d 8" 4"x10"
1st Fl'r 9 inch Basem't Pipe
8" Basem't 4x12 Riser
First Floor 10 inch Basement Pipe
Second " 9 " Basem't 4x12 Riser
2d " 5"x14" Riser
First Floor 12 inch Basement Pipe
Second " 10 " Basem't 5"x14" Riser
First Floor 14 inch Basement Pipe
Second " 12 " Basem't 8"x14" Riser
NOTE
Rooms from 8 to 15 feet in width assumed to have not over 10 ft. ceilings.
Rooms 15 to 22' wide not over 12 ft. ceilings

Sizes of Piping Used in Furnaces.

PLUMBING AND HEATING MARKETS

MONTREAL.

Nov. 29.—Barring a stiffness in solder, due to the high price of tin, some jobbers quoting an advance of 1c to 2c, although others have not changed their figures yet, there is no alteration to the markets. All lines are firm, and boiler and radiator prices were never so firm and generally held as at present. As a rule, at this time, jobbing houses are commencing to feel a slackening off, due to the winter, while manufacturing plants begin to lay up stock to help things out when the spring rush commences. But this year there has been no falling off. Business is as brisk as ever, while the makers are working at full pressure to supply orders for immediate shipment, without thinking about stock. The absence of snow and much frost have enabled buildings to be pushed forward vigorously. The prospects are for a strong demand for some time, and one jobber expresses the opinion that the rush will continue right on to the spring. This is a little optimistic maybe, but undoubtedly there is every indication that the call will last well into the winter.

Soil Pipe.—The market is very firm, but unchanged. There is still the same rush, and not a length of pipe is lying round that is not wanted. The mildness of the weather has enabled foundation work to be carried on briskly. Makes have all that they can do to handle the call. We quote medium and heavy, 70 and 10.

Lead Pipe. — The good movement which has characterized pipe for so long still continues. The firmness of the lead market makes pipe equally firm, but there has been no alteration in price. We quote pipe and waste 9c per lb., calking lead 4½c, traps and bends 50 per cent.

Solder—The continued high price of tin has made the price of solder advance in some quarters from 1 to 2c, but other houses have not yet made a change. The demand is good all the way round. We quote half and half 22c to 23c, wiping 20½c.

Iron Pipe—With the other lines pipe is in very strong demand, and not a great surplus of stock on the market. We quote ¼-in. black, 63; galvanized, 48; ⅜-in. black, 59; galvanized, 44; ½-in. black, 69; galvanized, 59; ⅜ to 4-in. black, 7½; galvanized, 61½.

Radiators and Boilers—There is no let up in the demand. Every boiler and radiator as soon as it is made is wanted at once, and still there are houses waiting for their heating system. The trade for this time of year is reported as being almost unprecedented. Prospects for a continuance of this demand look extremely good. The market is very firm, and makers were never more closely in line with each other. We quote: Steam boilers, 60 and 5; round hot water boilers, 50 and 10; hot water radiators, 50 and 7½; steam raidiators, 50 and 7½ and 2½ per cent.

Metals.—The high prices in tin have continued, and the local market has advanced 2c. We quote tin 44c, copper, 14; lead 3 2-5; spelter 6¼c.

TORONTO.

Toronto, Nov. 28.—The general tone of the plumbing and heating market is unusually good for this time of year. Although some reports of a slackening in demand are heard, the majority of supply houses state that they are still being rushed to keep up with the trade, and that they can see no reason to expect any lull until the first of the year. One supply house is still behind with its orders, and expects to be kept as busy as possible until the end of December. A sudden spell of severe weather might possibly bring a cessation of trade, but this is not regarded as at all probable from present indications.

The long continuation of mild weather has had much to do with the present activity, but behind that again is a general stimulation of the plumbing business in all sections. There has been a busy tone to trade everywhere, and the natural result has been augmented business for the supply houses.

No price changes have been recorded in the past fortnight.

Enamelware.—There is about the same demand for enamelware, the supply houses in some cases being behind with their orders. The manufacturers are working without cessation to meet the trade, and there is every evidence of continued activity in these lines. Prospects are considered good for an all-winter trade.

Soil Pipe.—Despite the lateness of the season, the call for soil pipe has not fallen off to any appreciable degree. In fact, it is found practically impossible to supply light pipe, owing to the manufacturers stopping making it. No more supplies will be obtainable until after January 1, and in the meantime some supply houses are practically cleared out. One Toronto firm has been refusing orders steadily, and others are not at all anxious to sell from their depleted stocks. Luckily the call for this variety of pipe has not been heavy. Medium and heavy pipe is quoted at 70 and 10; 7 and 8-inch sizes, 50 per cent. Fittings are quoted at 70 and 10 off.

Lead Pipe.—The strength of the lead market is shown in the firmness of lead pipe prices. Lead waste is 9c per lb., and caulking lead 4½c. Traps and bends are quoted at 50 per cent. There is a good demand still.

Iron Pipe and Fittings. — Malleable fittings are discounted at 37½ to 40 per cent; cast iron fittings from 60c to 65c; cast iron bushings are quoted at 70; malleable bushings 65; nipples bring 75 and 10; headers, 60; flanged and malleable-lipped unions, 65 per cent; galvanized pipe $6.35; black pipe, 1-inch size, $4.70 per 100 feet. There is a continuous strong demand for all lines.

Solder.—The increase noted two weeks ago in solder has been pretty generally maintained. Half-and-half sells at 22c and 23c, and wiping, 19c and 20c. As the demand continues as strong as ever it is not likely that the former prices will be resumed this season.

Brass Goods.—Plumbers' brass ware is going ahead ,and there is now a splendid market for these lines. Prices remain stationary. The manufacturers have plenty of orders in hand, and find it rather difficult to keep up, as most orders received now make demand for immediate shipment.

Boilers and Radiators.—The rush season is still at its height in heating lines. Although a falling off in demand was confidently expected before this, there have been no signs of it yet. Colder weather would precipitate the wind-up of the heavier trade, but in the absence of any atmospheric change, the demand continues brisk. Discounts are quoted at 50 and 10 for hot water boilers and radiators; an extra 2½ being given for steam radiators.

MAKING A JOINT UNDER PRESSURE.

A plumber sometimes finds it necessary to start a pipe in a fitting from which water is flowing under pressure. This is an unpleasant task and the person attempting to do this will undoubtedly get wet. The water may be diverted by attaching a stop-cock to a long nipple and on this a pair of ells to form a reverse bend. Leaving the cock open while starting the thread removes practically all pressure from the branch and the reverse bend throws the water away from the workman while he runs up the thread by hand, after which the cock can be closed, and the work completed in the usual manner.—E. S. Culver, in Popular Mechanics.

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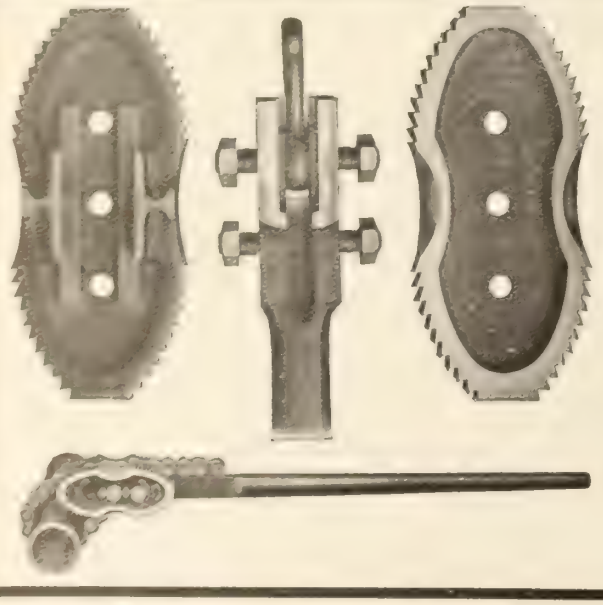

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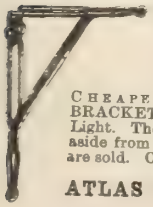

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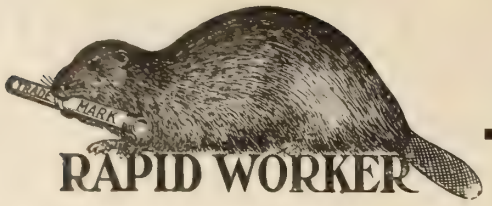

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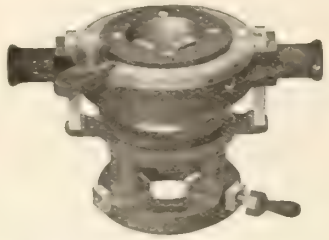
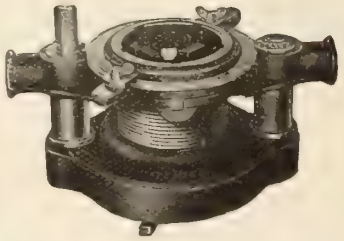
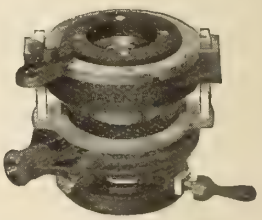
HAVE cut the cost of pipe threading in two because they will thread all sizes of pipe without changing dies. They are built on the receding principle which positively enables one man to thread any size of pipe and produce absolutely tight joints for all work, including hot water. They save the time formerly used up in changing dies and looking after loose parts, and eliminate all of thread-stripping when backing off.



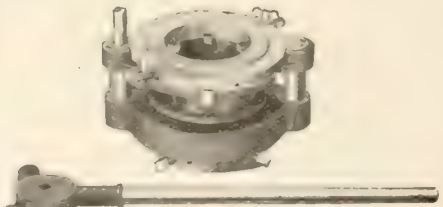
No 25A, threading 1, 1¼, 1½, 2-inch pipe. A boy can operate it.



No. 41. Cuts 2½, 3, 3½ and 4-inch pipe.



No 26A. Cuts 1, 1¼, 1½ and 2-inch pipe. A boy can operate this tool.



No. 60. Uses two sets of dies. One set cuts 2½, 3, 3½ in. [illegible] they are inserted without removing any parts.

No. 6, threading ¼, ⅜, ½, ¾ inch, complete

No loose Bushings or loose Dies on No 25A and No 6, and they cut 1, 1¼, 1½ and 2-inch pipes.

We can furnish a separate set of dies for 1, 1¼, 1½ and 2-inch pipe

Write us for Illustrated Price Lists.

BORDEN CANADIAN COMPANY,

66 Richmond Street East — Toronto, Ont.

A Hundred Years Ago

this business was started in a very small way. By selling reliable goods and giving all our customers a fair and square service, it has grown to be one of the Largest Plumbing Supply Firms in the trade.

"Scotia" Plumbing Supplies

embrace the products of all the most reliable manufacturers in the trade. We carry large stocks and can generally ship from stock on receipt of order.

Test Our Service With a Trial Order.

Wm. Stairs, Son & Morrow, Limited

HALIFAX - - NOVA SCOTIA

Established A.D. 1810

Will you Partner With Us in Radiators?

Recommend and instal the

"SOVEREIGN" RADIATOR

It is made in a large number of designs, and fits handily into any vacant spot in store, office or home.

Your reputation is at stake when you instal a modern heating plant. See that the reflection is all you could desire by installing the "Sovereign" —the radiator that always makes good!

Send for booklet and particulars.

Taylor-Forbes Co., Ltd.

Head Office and Works: Guelph, Ont.

TORONTO—1088 King St. West. MONTREAL—246 Craig St. West. WINNIPEG—The Vulcan Iron Works, Ltd. ST. JOHN, N.B.—H. G. Rodgers, 53½ Dock St. QUEBEC, QUE.—The Mechanics Supply Company. VANCOUVER, B.C.—Taylor-Forbes Co., Ltd., 340 Pender St. CALGARY—The Barnes Co., Limited.

Plate F
199

The Standard Ideal Company Ltd.

Dimensions Lavatory 18 x 21" Oval Bowl 11" x 14" Back 8"

We have a large number of other styles including many new designs to select from--For which see our catalogue F now ready for distribution.

We are also manufacturers of full lines of Bath Tubs, Shower Baths, Lavatories, Sinks, Laundry Trays, Wash Sinks, Range Closets, and Urinals, etc., etc.

Head Office and Factories, Port Hope, Ontario

Branch Offices and Sample Rooms:
Toronto, 119 King St. East; Montreal, 155 Notre Dame St. W.; Winnipeg, 154 Lombard St.

You Ought to Sell

Empire Closets, because by so doing you will never have customers' complaints to make good. And you know what a hole it makes in your profits when you have to go over a job several times without any charge.

"Empire" Closets

have the largest sale in Canada, simply because they are built right, from the right materials.

GUARANTEED

The woodwork on Empire Closets is guaranteed never to split. The tank is larger and gives a stronger flush. Handling Empire Closets is the surest way to please customers and build up business

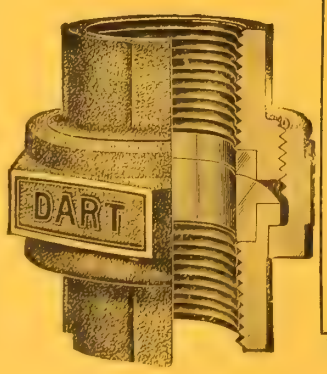
EMPIRE MFG. CO., Limited
LONDON, ONTARIO

Permanently Tight Joints

against steam, air, gas, oil and water are made quickly with Dart Unions—whether pipes are in or out of line. Each section of the

"Dart" Union

is faced with smoothly-ground bronze, making a **bronze-to-bronze ball joint** that can **never** rust or corrode.



You can connect and disconnect Dart Unions over and over again without impairing their efficiency in the least degree.

Your Jobber Sells Dart Unions.

DART UNION COMPANY, LIMITED
Niagara Street, Toronto, Ont.

PLUMBER & STEAMFITTER

and Sanitary Engineer of Canada

THE MACLEAN PUBLISHING COMPANY, LIMITED, PUBLISHERS

MONTREAL, 701-702 Eastern Townships Bank Bldg. TORONTO, 143-149 University Ave. WINNIPEG, 511 Union Bank Building
LONDON, ENG., 88 Fleet St. E.C. NEW YORK, 115 Broadway

Vol. IV, No. 24 (New Series). Publication Office : TORONTO, DECEMBER 15, 1910. Old Series, Vol. XXII. No. 24

WE have pleasure in announcing that, in future, all our advertisements in Plumber and Steamfitter will appear on this front cover space. The front cover is unquestionably the best advertising space in this publication. And as the products of the Standard Ideal Company are unquestionably the best goods of their kind in the world, it is only natural that they should be advertised in the best space available. Watch for our advertisements—you will find them particularly interesting.

The Standard **Ideal** *Company Ltd.*

Head Office and Factories, Port Hope, Ontario
Branch Offices & Sample Rooms: Toronto, 119 King St. East;
Montreal, 155 Notre Dame St. W.; Winnipeg, 154 Lombard St.

Beaver Brand

Cast Iron Enamel Ware

Famed for its Smoothness, Colour and Wear

This Cut Illustrates Our

Beaver Brand Roll Rim Sink

This is one of our leading and best known lines, which has given satisfaction throughout the Dominion. Our new and up-to-date plant is unrivalled for the production of Bath Tubs, Slop Sinks, Kitchen Sinks, Laundry Tubs, Lavatories, Closets, etc. Customers can rely on having their orders promptly filled. Every article of "BEAVER BRAND" manufacture is guaranteed.

Amherst Foundry Co., Ltd., Amherst, N.S.

ONTARIO SALES AGENT:

MONARCH BRASS MFG. CO., LTD., 178-180 Victoria Street, TORONTO

MARITIME PROVINCES	MONTREAL, P.Q.	WINNIPEG, MAN.	VANCOUVER, B.C.
All Jobbing Houses	All Jobbing Houses	E. B. Plewes, 120 Lombard St.	A. O. Campbell

Announcement:

WE beg to advise the trade that we have cancelled the arrangement existing between us and our Ontario agents and have notifed the latter to vacate our premises, 21-27 Lombard St., Toronto, where, after the first of the year we will re-establish a branch of our business under the direction of Mr. Chas. Webb, our present general sales-manager. It is our intention to carry at the above premises a complete stock of

"Daisy" & "Viking" BOILERS

soil pipe and fittings and a full line of steamfitters' supplies.

We wish to express our sincere appreciation of the generous treatment accorded us by the trade in the past, and hope for a continuance of their confidence.

Warden King, Limited

MONTREAL

HONEYWELL

Is the Name of the Most Efficient, Sightly and Economical

HOT WATER Heating SYSTEM

Ever used in Canada, United States or European Countries.

45,000 Systems Installed Within Five Years Testify to Intrinsic Value of

HONEYWELL IDEAS

Get away from the old—"good enough for me" type of installations.
You cannot afford to be last in adopting Honeywell system.

The Honeywell Heating Specialty Company

Wabash, Ind.

Frank T. Rawley,
Manager for Canada

Room 1008 Eastern Townships Bank Bldg, Montreal
Phone Main 4615

Flanged Elbow

Reducing Flanged Tee
Reducing in Run or Branch

REMARKABLE TESTS

which speak volumes for the superiority of

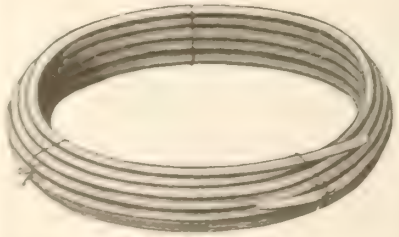
STANDARD S FITTING!
BRAND

At McGill College, Montreal, our 1¼ inch Screwed Elbow, guaranteed for 125 lbs., broke at 5000 pounds pressure, and our 3 inch Flanged Elbow, guaranteed for 125 pounds, could not be broken the packing blowing out at 2800 pounds pressure.

Think what this enormous strength means in point of safety. We make ***CAST IRON FITTINGS,*** all sizes, for Steam, Gas, Oil or Water. Write for details.

STANDARD FITTING & VALVE CO., Limited - GUELPH, ONTARIO

LEAD PIPE



1/8 to 8 INCHES

Notice——Plumbers

WE MANUFACTURE

Lead Pipe, Lead Waste, Hydraulic Drawn Traps, Non-Syphon Centrifugal Cast Traps, SOLDER FOR ALL REQUIREMENTS.

Our prices would interest you. Write us.

The Canada Metal Co., Ltd. - Toronto

Bathroom Fixtures That Cannot Sag

Flush Boxes, Seats, Basins, Tubs, etc., should be properly fastened to bathroom walls and floors. Sagging and "Dipping" fixtures are as unsightly as they are dangerous. The use of **SEBCO Screw Anchors** and **STAR Expansion Bolts** is the only recognized means, approved by the Master Plumbers throughout the United States, that has the hearty endorsement of Government Plumbing Contractors. Used by Plumbers for every purpose—Anywhere an ordinary bolt or screw is unsafe. No Lead—No Plugs—An easy, quick, absolutely dependable means of fastening.

For Catalogue 74 of Plumbing Specialties and Free Working Samples, address Cat. Dept. 74, at nearest Sales Agency.

BACON BROS., 377 St. Paul Street, Montreal, Canada.
TURNER & WALKER, 171 James Street, Winnipeg, Canada.
H. F. McINTOSH & CO., 28 Toronto St., Toronto, Canada.

HOUSE HEATING BY STEAM AND WATER

By CHAS. B. THOMPSON

This recent book specially written for those interested in Heating Apparatus and Installation for Houses, giving

Methods of Installing Heating Apparatus in the Home.
Rules for Computing Radiation and Heat Loss.
Graphic Charts Showing Boiler Power and Coal Consumption.
Illustrations and Descriptions for Heating Water for Baths, Swimming Pools, etc.

A remarkable feature of the work is the great collection of diagrams showing the layouts of systems most successfully used in dwellings of different character and size, and including piping plans, radiator location and connections for dwellings, apartments, stores, etc.

265 pages. 268 illustrations.

PRICE, $3.00.

TECHNICAL BOOKS

143-149 University Ave. Toronto

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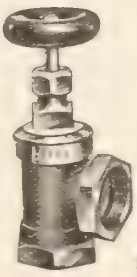
"Kerr" Radiator Valves

on your heating work, and your valve troubles are over

We charge the price and furnish the reliable goods

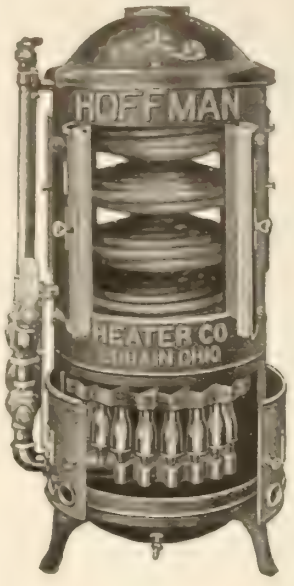
The Kerr Engine Co., Limitd



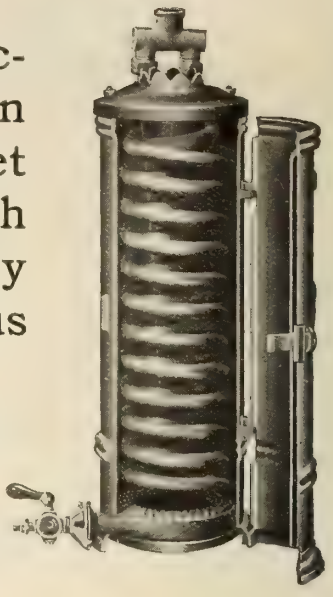
Look for Our Name "KERR" on All Genuine KERR VALVES

Walkerville - Ontario

Use Nothing
. . . but the "HOFFMAN"



You will get better satisfaction, make more money on them, and be able to get them at short notice through your supply house. If they do not carry them, write us for prices.



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Jas. Robertson Company,	Toronto, Ont.
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Crane Company,	Winnipeg, Man.
Crane Company,	Vancouver, B.C.

THE HOFFMAN HEATER COMPANY
FACTORY AND GENERAL OFFICES, LORAIN, OHIO, U.S.A.

A NEW VALVE

JENKINS BROS.'

GUN METAL AND IRON BODY

GATE VALVES

"TYPE K"

Special Features:

Highest Quality Steam Metal. Perfect Interchangeability. Double Compensating Bronze Wedges. Metal Gland in Stuffing-Box. Great Strength of All Parts. Carefully tested to 250-lbs. Water Pressure

UNRIVALLED IN DESIGN AND WORKMANSHIP

A Thoroughly Reliable Gate Valve for Steam, Water, Oil, Gas or Air. A trial will convince you that it will pay you to use these valves on all your work.

Stamped with TRADE MARK like cut.

Stocked by Machinery, Hardware and Supply Dealers throughout the World.

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JENKINS BROS., Limited

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Compression Index Basin Cocks

Attractive Design
Mechanical Construction
Encased Washer
Square Threads on Stem
Special Packing
Short or Long Spout

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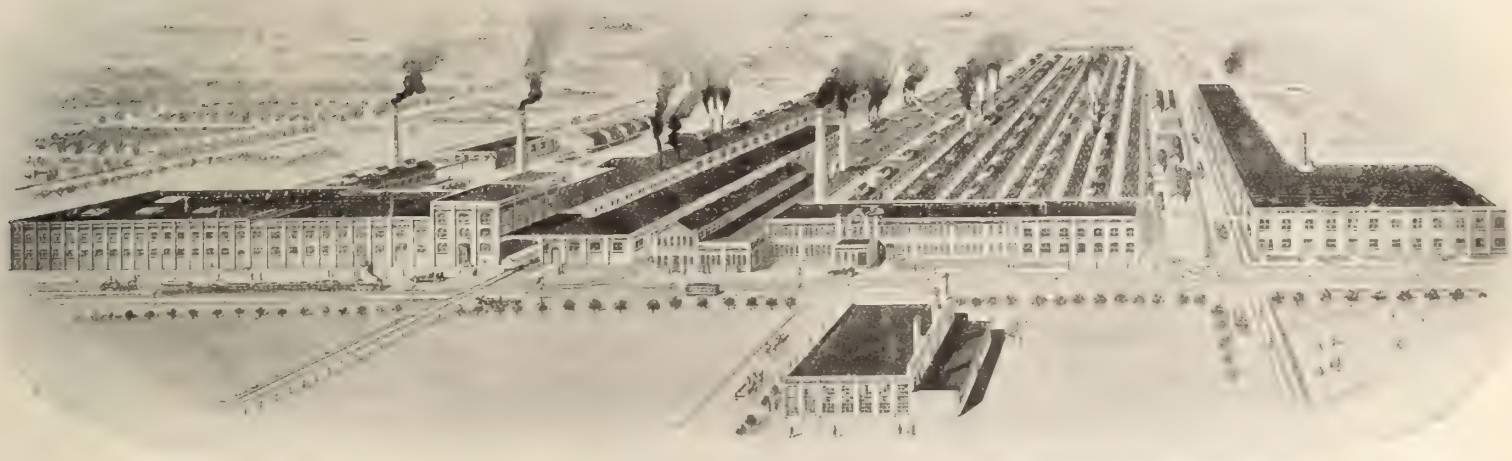
Canadian Brass Co., Limited

GALT, CANADA

The line you have waited for will appear in our advertisement in January 15th issue of this paper. WATCH FOR IT.



Malleable and Cast-iron-pipe Fittings

MANUFACTURED BY

FITTINGS LIMITED

OSHAWA - WINNIPEG - MONTREAL

Plumber and Steamfitter

and Sanitary Engineer of Canada

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THE MACLEAN PUBLISHING COMPANY, LIMITED
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Circulating amongst Plumbers, Steam, Hot Water and Gas Fitters, Sanitary Inspectors, Heating and Ventilating Engineers, City Engineers, Boards of Health, Architects, etc.

TORONTO, DECEMBER 15, 1910

BACK UP THE INSPECTOR.

A plumbing inspector in a Canadian city not long ago ran across a plumbing job which was apparently a "fix-up" and taking the plumber (who happened to be an officer in the local master plumbers' association) to task, overheard the plumber give the journeyman on the job a "warm" call down. Following the job up a few days later the inspector also reproved the journeyman, but was met with the remark that: "A man has to do what the boss tells him." According to the journeyman the plumber was really responsible and had "called" the journeyman to cover up his own guilt. The inspector very sensibly told the journeyman that he was a fool for standing for the "call" as the boss would only keep him as long as he had work for him in any case.

There is a moral for both masters and journeymen in the incident.

The master plumber, all the more so if he is an association man, should always endeavor to do good work and should be above doing "fix up" jobs. In the first place it is discreditable to himself and injurious to his reputation, and in the second instance it is damaging to the trade as a whole and in direct opposition to the aims of all organized plumbers, who constantly preach, if they do not practice, the benefits of high-class work.

The journeyman, likewise, should stand for quality always as poor work is always blamed on the workmen. A journeyman with backbone enough to refuse to scamp a job at the order of the boss may lose his job, but he will soon get another and better one. But a journeyman would have more chance of holding his job if he refused to do bum work. The master would respect him more, or if he wanted to do scamped work he would be afraid to fire a man for refusing to do it.

Too often we hear objections raised to plumbing inspectors, because they are said to be too severe. The inspector who is severe is the right man for the job and the intelligent master plumber should give him the strongest kind of support. The plumbing trade has, rightly or wrongly, won a bad name and the only way to wear the disrepute down is by a constant preaching (and practicing) of high grade workmanship and materials. The shoddy plumber must be suppressed and the inspector with backbone is the man to do it. An inspector who plays favorites and winks at abuses, even if they are done by big firms or association officers, deserves to be told to hunt another job. To threaten to "get" an inspector because he does his duty may have [illegible] but even in such cities the men behind the sanitary and health departments are [illegible] to be open to lodge influence.

Another way in which the Master Plumbers' Associations should back up the inspectors is by using their influence to have the various Candian cities send at least one inspector to the annual conventions of the American Society of Inspectors of Plumbing and Sanitary Engineers. The next convention is to be held at Milwaukee, Feb. 6 to 8, 1911, and it is to be hoped that Canada will be well represented. So often have aldermen and other "big men" gone on junketing trips that it may be hard to get an appropriation to send a practical man to such an important convention as this but money could not be better spent.

Wonderful changes have taken place in plumbing and sanitary work during the past generation or two, and the end is not yet. It behooves the Master Plumbers' Association, which desires the plumbing by-laws of each city to be kept up to date, to keep the plumbing inspectors from getting into a rut by using their influence to have the Canadian inspectors attend this convention.

Particularly is it desirable to send inspectors from cities having a revision of the plumbing by-laws in prospect. Toronto is in this position and its new supervising inspector should be one of the Canadians sent to the Milwaukee meeting.

TRY PUTTING IN TWO BIDS.

Have you been bidding low on contract work and found that when you included a margin of five or ten per cent. for profit to cover your cost of doing business some other master plumber secured the contract at a price which barely covered the cost of material and necessary labor to do the job? And have you been trying to meet this fellow by offering to "take the work at the same price," rather than let the customer think you are high priced, and figuring that if the other fellow can do the work at the low price you may be able to skimp the job and clear yourself.

A Toronto master plumber after some experience of this kind adopted a new plan and has found it to work very satisfactorily. He puts in two tenders on some jobs, one a low bid intended to meet the price cutters and the other a fair price for a good job. Then when the customer expresses surprise he comes along with a quality talk, telling the customer that if he wants a low priced job he will give it on the same basis as the other fellow, but if a really good job is wanted it will pay to spend a little more money on it.

The plan isn't one which can be used at all times, but where the trade is going to the bad as a result of foolish cutting it will pay some plumber or fitter with backbone to try the two bid plan.

MONTREAL THE HEATING CENTRE

The year 1910 has been the best in the history of the plumbing and heating trades so far as volume of output is concerned and as prices have been held to more firmly than in some other seasons and heavy losses in previous years have forced greater care in the granting of credits the financial returns have also been very satisfactory. And with even better credit arrangements in view for next season the prospects, in Toronto, if not elsewhere, are excellent.

Figures are hard to secure from manufacturers and and supply men and none can be quoted with any certainty for the present year, but The Plumber and Steamfitter is informed that of the 7,500 hot water boilers marked by manufacturers of heating goods in 1909, over 3,000 were installed in Montreal and other places in that district. This speaks volumes for the wonderful growth of Canada's metropolis and the fine class of buildings being erected in that city.

In Montreal and district the dwellings erected are largely apartment and flat buildings, which are too large for hot air furnaces. Consequently hot water has the call. In Toronto six to eight room detached or semi-detached houses make up a large share of the buildings erected, and most of these are put up by speculative builders who instal furnaces because of their cheapness. The hot water, boiler, however, is winning increased favor every year in Toronto. In Winnipeg and the west steam heating is most popular.

AN UNFAIR SYSTEM.

There are conditions existing in the plumbing trade to-day which are distinctly detrimental and anything but productive of large profits. In a sense, these conditions have been created by the plumbers themselves, through their readiness to respond to a call no matter whether there is any prospect of work or not and their slackness of business methods.

It frequently happens that an architect or owner will call in a plumber and ask him to tender on a certain contract and draw up specifications for the plumbing work. After the specifications have been handed over, other plumbers are asked to figure on the work. If another plumber is the successful tenderer, the man who drew up the plans gets nothing for his pains. This course is distinctly unfair to the plumber, but members of the trade probably have themselves to blame, insomuch as they have neglected to stand out against it.

Recently a Toronto plumber was asked to figure on a building and to supply the plans. He sent in his tender instead with a note to the effect that, if his terms were satisfactory, the drain plan and specifications would be forwarded. This system of doing things did not appeal to the owner; at any rate, the plumber did not get the contract. If, however, all plumbers would thus refuse to supply specifications gratuitously, the result would be a fairer way of conducting such matters. Many men now waste much time and energy without any remuneration whatever.

A MONTH OF BIG DEVELOPMENTS.

Some important announcements have been made in Canadian plumbing and heating circles during the past month, and rumors are current of still other important changes regarding which negotiations are now on, but not yet complete. One of the concerns a soil pipe concern which is a large consumer of pig iron. It would be unfair, however, to mention any names until the rumors have been confirmed.

Details of several far-reaching changes are given in the reading columns of this issue, and present indications are that there will be more important news in the Jan. 1 issue of The Plumber and Steamfitter.

OFFICIAL NEWS
N. A. M. P. & S. F. of CANADA

OFFICERS 1910-11

President — G. H. Cooper, Toronto.
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Chairmen of Committees:—Legislative, H. A. Knox, Ottawa; Sanitary, Geo. Ross, Brockville; Apprenticeship, Jas. Griffin, Montreal; Essay, J. E. Farrell, North Bay.

Next National Convention will be held at Port Arthur and Fort William about June 1, 1911.

TORONTO MASTER PLUMBERS GAIN A POINT.

The appointment of a supervisor of plumbing inspectors in Toronto, has been hailed with unanimous approval by Toronto master plumbers. Up to the present they have labored under adverse conditions. Each inspector placed his own construction on plumbing regulations and forced the plumbers, whose work he passed, to live up to that interpretation. What suited one man, was condemned by another. There was no fixed, official interpretation or standard for plumbers to go by. One day, perhaps, a plumber would be forced to alter work to suit the ideas of the inspector who happened to look it over. The next contract in another part of the city, he would take pains to carry out according to the dictum of that inspector, but another one would pass verdict on his work this time and order it done over again. The inspectors, in fact, did not always agree and the plumber suffered in consequence.

Under the new arrangement, the supervisor will supply the interpretation of the regulations and fix an official standard, which the inspectors will see is lived up to in each and every contract. The supervisor will be a court of appeal. If a plumber feels that his work has been unjustly condemned, he will always have the privilege of laying his case before the supervisor. As Mr. Meadows, the man chosen for the post, is admittedly well versed in every phase of the plumbing trade and judged by all to be a man of utmost fairness and just discrimination, the new system should result in the establishment of better conditions. Having a set standard to work up to, the plumbers will do better work.

The change has not been brought about without hard work. The agitation to this end has been conducted for years. Reforms, however, are slow in arriving and the present one has taken its time. Credit is due Dr. Hastings, the new medical health officer, for the ready way he has grappled with the situation. Further innovations are in view which should materially improve conditions governing the plumbing trade.

ASSOCIATION NEWS NOTES.

The Calgary Association of Sanitary and Heating Engineers are holding a banquet on Thursday, Dec. 15, at the Grand Union Hotel.

President Geo. H. Cooper is sending out Christmas greetings in the form of a neat card to all members of the N. A. M. P. & S. F.

New Comfort Station at Berlin is Splendidly Equipped

Seven Thousand Dollars Spent on Structure in Victoria Park—Crowds of Excursionists Have Respected the Handsome Interior Fittings and no Damage is Done After a Summer's Use—Other Places Should Follow Berlin's Example.

By establishing a large and thoroughly up-to-date public comfort station at Victoria Park, Berlin, Ont., has taken a step in advance of other Canadian cities. It is claimed, in fact, that the comfort station at Belle Isle, Detroit, is the only one in America to equal the structure at Berlin.

Exterior View of Comfort Station—During the Summer the Appearance is Further Enhanced by Large Electric Globes on each Side of the Entrance.

The question of providing adequate conveniences for the public is confronting practically every city and town today. Berlin has taken the first step and has in the Victoria Park station a model on which similar structures in other places might well be based. It cost quite a sum of money, but in Berlin the people believe it to have been money well spent. Although many at the outset thought the amount appropriated altogether too large, no sentiments of that kind are expressed now.

Victoria Park is a very picturesque spot on the Grand River. It is perhaps the most popular park in Western Ontario for excursions and picnic parties and is visited by probably one hundred thousand people during the summer season. The need for a public comfort station was therefore pronounced and the Berlin Parks Commissioners were well advised in taking the step they did.

Description of Station.

The new comfort station is situated centrally in the park and from the exterior presents a very fine appearance. It is built entirely of stone, is well supplied with windows and has an entrance on each side, one for women and one for men. It is, of course, one storey in height with a basement.

The interior is finished most carefully and handsomely. Tiled walls and cement and Terrazzo floors, kept scrupulously clean by the janitor, give the rooms an unusually clean and neat appearance. The fixtures, despite a season's use, still look as good as new and are kept in splendid order.

The structure is laid out in four compartments, the largest of which is the rest room for women and children. On each side, with entrances from the rest room, are lavatories. The one to the right is fitted up with six closets, two basins and a slop sink. This was used by women and children during the past summer. The lavatory on the left is not yet fitted up but it may be completed next year. The men's lavatory has an entrance on the other side of building.

In the women's lavatory there are six closets, each containing a hopper and basin. The partitions and front framework are of marble. The closets are along the outer wall. Along the wall between the lavatory and the rest room are two basins and a slop sink.

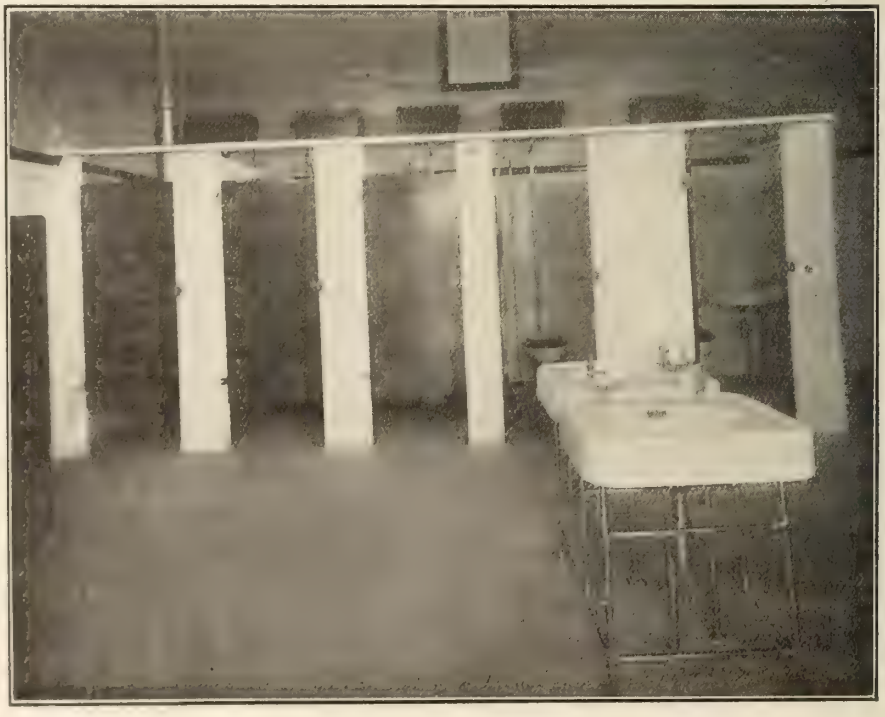
The men's lavatory contains five closets. Four slate urinals are placed along the right outer wall. The left wall may ultimately be used for the same purpose, space being left. In the centre is a double basin with small fountains on either side.

The Rest Room.

Most elaborately and comfortably fitted up is the rest room for women. It is 23 by 20 feet, with tiled walls and floor of concrete and terrazzo. The furnishings are in mission oak and give the room a most comfortable appearance. The room has in fact proven a boom to tired lady excursionists and is always well patronized when there are visitors at the park.

What the Station Cost.

The whole structure cost in the neighborhood of $7,000. This amount was apportioned as follows: Mason work, $3,385; carpentering, $900; plumbing, $1,133; wiring and electric fixtures, $100; painting, $135; metallic ceilings, $65; marble work, $525; terrazzo flooring, $343; cement in basement, $125;



A View of the Men's Lavatory.

outside cement platforms, $100; furnishings in rest room, $100.

The plumbing was done by Wm. Knell & Co., Berlin, and the marble work by the James Robertson Co. The Knell Co. did their work in most creditable style, the plumbing contract having been carried out satisfactorily in all respects.

The Rest Room for Women and Children.

No Damage Done.

"It pays to put into a building of this kind the best material and workmanship available," said G. M. De Bus, secretary of the Parks Commission. People will respect it then and not do the wilful damage that is so common in less pretentious places. We have no trouble whatever in that way."

That people are more careful since the new station was erected was established during the past summer. In previous years the visitors to Victoria Park were just as careless, and sometimes as maliciously destructive, as excursion crowds anywhere. It was found a very difficult, almost an impossible feat, to keep the lavatories presentable. With the new building, however, has come a complete change of front on the part of the public. Although the comfort station was used practically all the summer, the end of the excursion season found the place quite as good as new. The walls, floors and fixtures were without a scratch, and there were no signs of wear and tear. The playful form of vandalism which delights in throwing stones and equally destructive substances down the basins had not been in evidence. The scribbler, who makes it a practice to deface the walls with writing, had been awed apparently into inaction by the unusual fineness of the interior. No repairs were needed at the end of the season and, after the janitor had thoroughly cleaned up the place, it looked as good as when it was first thrown ipen to the public.

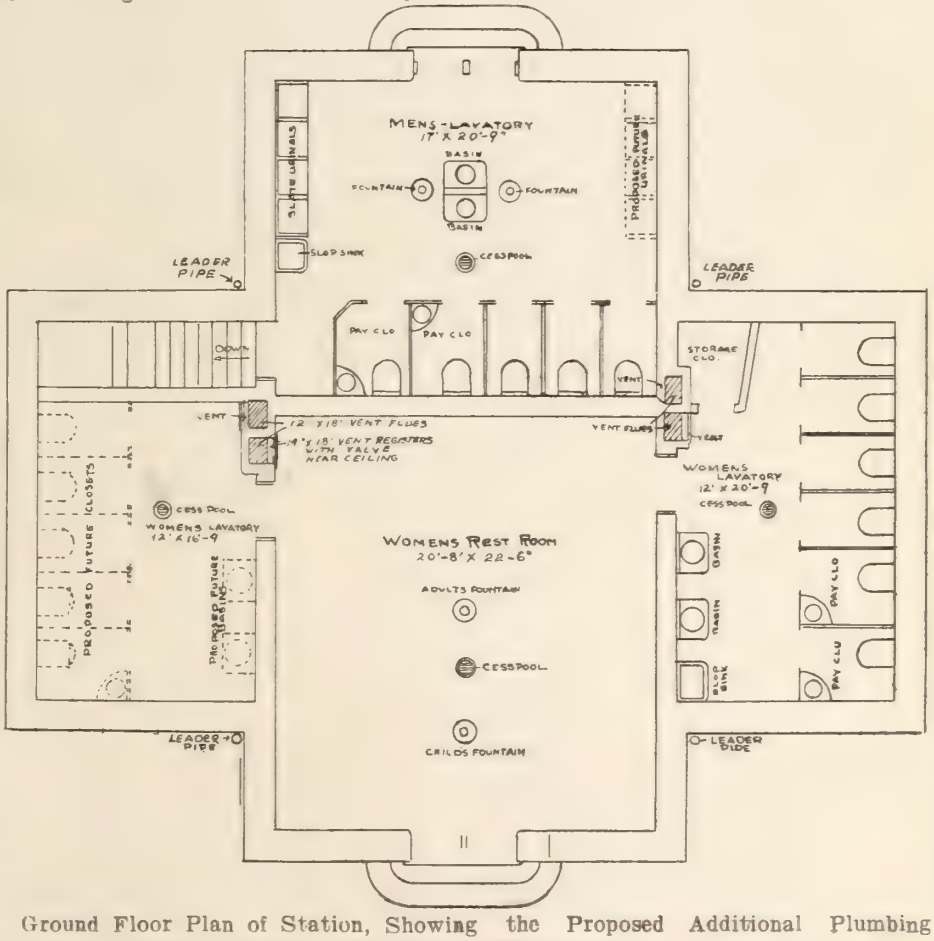
"Throwing money away.j' was a common comment when the money was first appropriated for this purpose. But the good results obtained was so potent to all that the remark has been changed to "money well invested."

The Parks Commission had considerable preliminary work to do before putting the project through. Some opposition was shown at first on the board and the public did not unanimously approve the expenditure of a sum so much larger than had been generally anticipated. Secretary De Bus and his associates, however, had the courage of their convictions and were not to be gainsaid. Plans were prepared and submitted to the board. So good an impression was created by the plans that little difficulty was afterward experienced in putting the matter through the Parks board.

All places need institutions of the sort and the example of Berlin is well worthy of emulation. Not only should public parks be so equipped, but the central part of each city should boast of at least one comfort station. Further, a niggardly attitude on the question of expenditure does not pay. The result of Berlin's experiment has been to demonstrate that a comparatively expensive station can be kept clean and with less damage than is otherwise possible.

Agitations have been started in numerous other places in Ontario for comfort stations, but all to date have been fruitless. Now that Berlin has taken the initiative step, it should be much easier for other places to follow. A visit to Victoria Park would serve to convince the most doubtful parks' board or city council of the feasibility of the move. After seeing what Berlin has done, other places should soon follow the example.

To call attention to this public necessity is a duty devolving on all progressive citizens. As it lies within the scope of the plumber particularly, members of that craft might well take upon themselves the work of agitating the erection in all cities and towns of public comfort stations.



Ground Floor Plan of Station, Showing the Proposed Additional Plumbing Work, as Well as the Work Already Done.

The Plumbing Business

As long as the plumber clings to his traps, tubs, pipes and wrenches with a mind rising no higher than the mechanical details of his trade, he will be merely a "plumber." This series of articles will deal more particularly with the business end and readers should derive benefit from reading them

Written for the Plumber and Steamfitter by Charles H. Denison.

Chapter X.

He would be an exceedingly bold man who would take a red flag and go out into the meadows where a drove of cattle were quietly feeding and stir up the gentlemen members of said drove by waving the aforementioned red flag in their faces. Likewise when one approaches the average plumber and begins to talk about system, science and technology—well such a person had better keep both eyes on the indicator for something is liable to happen right there. Since knowing anything at all about this business I have observed that the average plumber not only objects to giving any "tips" to any one regarding the business, but also that he has some violent prejudices against "being told."

It must be in the blood I "reckon" for they are not ignorant men. "System!" The word, alone, seems to have terrors for a certain class. Such people would do well to study some of the good points of their grandparents who, at least, knew the meaning of "a place for everything, and everything in its place." You have probably observed the following saying on the walls of some shops or places of business, "Life is just one —— thing after another." I'll bet that the fellow who first gave utterance to those words was a person not guilty of order or system plus always seeing the darkest side of events in life.

Use System Every Time.

You can wager that if you engage in business undertakings that certain results are sure to follow. There are some matters which must be provided for. These affairs will come along right on time and if there has been no arrangement made for their reception the inevitable mix up takes place. Couple up to system every time! Use it in the shop, the office, in selling, in planning, in all of your various daily affairs. You know, then, what is due to occur and about what shape it will come to you (barring accidents) and when that particular matter is attended to, your mind is left perfectly free to grapple with the next problem in line and attend to it in an orderly way. Anxiety, worry, mistakes and kicks are thus reduced to the smallest possible amount.

You cannot turn yourself into a machine all the time, however, so use the same practical common sense in this matter that you do about various other points. Take a little time off, now and then, and get the kinks out of your brain. Don't put more kinks in (whisper). I gave this same advice to a certain fellow a few weeks ago and he got quite hot at me. "What do you think I am, a millionaire? It takes every cent that I can rake and scrape to make a living with the high prices and increased cost of living." That's the song and dance he fired at me.

"Say, Jack," I answered, "I hear that you acquired a neat little jag last Saturday afternoon. How much did you blow?" "About nine bucks," he answered. You know that you could not get that fellow to buy a book on heating or plumbing, and he simply would not take a trade paper. "Cost too much," he said, when he was asked. I want to call this matter up for it illustrates the absolute smallness, meanness and selfishness of some who are in the business and who richly deserve to be kicked out.

They are not compelled to buy the books or papers far from it—but when they plead poverty, while conducting themselves after such a fashion, they are about as pitiable an example of a "four flusher" as I know about. I'm not selling books nor getting subscriptions either, so if you think that I am sore why simply forget it, as these cases are only some of the points that I desire to bring out.

A Thing of Danger.

A few years ago any man who could lay a string of sewer pipe thought that he knew how to dispose of the sewage. A cesspool! That was it. A mere pit with walled sides, a cover (vented may be and possibly not), the bottom left unsealed so that some of the contents of the cesspool might "soak away." To-day through the efforts of scientific investigation we know that the cesspool is a thing of danger and should be avoided. My friend in the craft or business, as the case may be, what do you know about "baffle boards," "sludge-pipes," "filter beds," and "dosing chambers"? If these words represent no more meaning to you than the same number of words in the "Kickapoo" Indian language, you are certainly not making use of the advantages that come to your door each month in the year.

It's a good bet at ten to one that you do not read your paper for those words, have been used, in connection with certain articles in all the trade papers, many times in the past year. So as far as any of the practical science you are certainly a back number. A man in this business should be sufficiently well posted to be able to say: "That is an improvement upon the present manner of accomplishing matters."

Rapid Rate of Progress.

Please notice that I do not say "the best method" for at the present time we are making progress so rapidly that in a few years that which is considered best to-day, may be done away with. Much progress has been made and there is much to come. If members of the craft and business would apply themselves to their full extent as individuals to bettering things, there would soon be seen a great uplift all along the line.

They fail in this respect, expecting some one else to do it for them. The attitude, in many cases, seems to be to get as much out of the business as possible with the least effort. To skin, not only the customer, but also the very means by which they are making their livlihood, considering that it is not worth their while to mark the improvements; so ignorantly conceited as to believe (some of them) that no improvements are possible. If the coat fits, put it on. To such people, who exist is this plumbing business, I have only to say that the day of reckoning draws nearer every day and you are soon due to a rude awakening.

Enterprising Methods of Going After Business

Orillia Firm Takes a Half Page to Suggest a Bathroom Outfit as a Holiday Present—Sound Logic Used, and a Boost For Quality Goods.

One of the most enterprising advertisements of plumbing goods yet seen is that of the Orillia Hardware Co. reproduced in the accompanying illustration.

For utility and common horse sense it takes first place easily. What sound reasoning there is in that first paragraph, "What more suitable gift could you give your wife or family than to instal a system of plumbing and fit out a first-class bathroom equipment in your home," etc. And what bigness there is in the plumbing firm that will take a half-page spread to exploit a bright idea. Truly it is "the big store with the big stock," judging by the enterprise shown in this example of their work.

The ad. is well balanced and the cut sets it off to excellent advantage. The display is well chosen and the ad. is well calculated to interest the customers who own homes and have prospered sufficiently to feel like giving themselves and their families a practical holiday gift. If only one order was secured the ad would more than pay for itself and even if not a single order can be traced to the announcement it was money well spent as it will bring results later.

"Good fixtures are not expensive." That's an excellent line of talk and can be used to advantage by plumbers using smaller space in their local papers. And then the "You take no chance in giving us your plumbing work," following up the quality talk on the fixtures, is both timely and effective.

And then to catch the trade of those who have already installed plumbing fixtures the advertiser features his big stock of nickel-plated bathroom fittings —articles everyone needs and very reasonable in price.

Then the closing sentence: "Phone us your rush orders in plumbing repairs," and the motto: "Nor how cheap, but how good" are the kind of sayings which leave a memory behind them.

The Orillia Hardware Co. are to be commended for the timeliness and composition of their ad. which appeared in the Orillia News Letter of Dec. 7.

About Newspaper Advertising.

In newspaper advertising, as in many other things, a single thing done well is better than a lot of things half done. One particular article well illustrated and described will "hit the wall," while a general talk about the "best work at the lowest prices" will be money actually wasted.

Strive for originality. If the proprietor himself cannot put words and pictures together to make successful "ads." he should delegate the task to someone, either in the office or outside, to do it for him. But first of all, see that the "ads" are good common-sense sales talk—that they bring to the reader a reason why he should want the goods in question. And the reason why should not be the price.

A CHRISTMAS GIFT!
What more suitable Gift could you give your wife or family than to instal a system of Plumbing, and fit out a first-class bathroom equipment in your home. No room is so important as the Bathroom, so it should be the first one in which modern fixtures should be installed, and this is the one aim of our Plumbing Department.
Good Fixtures
High-Grade Fixtures, in White Enamelled Bath Tubs, Fancy Basins, Syphon Jet Closets with Piano Finished Tanks, Shower Baths, Roll Rim Sinks, with high backs, and Drain Boards.
YOU TAKE NO CHANCE
You Might
What Can I Give?
Towel Bars, a large selection to choose from, at 40c. and up. See our Glass ones, they are beauties and worth inspection. Soap Dishes, Soap and Sponge Holders, Tumbler Holders, and Tumbler and Tooth Brush Holders, Toilet Paper Holders, Mirrors, Glass Shelves, Filterers, Shower Heads, Toilet Paper, Etc.
COME IN AND LOOK.
WHAT CAN I GIVE?
LET US DO YOUR PLUMBING!
'PHONE US YOUR RUSH ORDERS IN PLUMBING REPAIRS. 'PHONE 24.
We Sell Everything in Hardware.
THE ORILLIA HARDWARE CO.,
All Orders Promptly Delivered.
OUR MOTTO:—"NOT HOW CHEAP, BUT HOW GOOD." THE BIG STORE WITH THE BIG STOCK.

Reproduction of Advertisement, 11x16 inches in size in an Orillia paper.

Anyone can write ads on a price basis alone—it takes salesmanship to sell a man a bill of goods to which a fat profit is attached. The newspapers advertisements should so influence the reader by the reasons and arguments put forth that he becomes convinced in his own mind that he wants the particular articles, and the matter of price is to be a large extent lost sight of. That is salesmanship.

The person reading the "ad" is an individual—he should be talked to as an individual, just as if he stood in the store and listened to the sales talk of the salesman. Make the appeal to the you in the man—talk your advantage in buying this article—why you should not delay in placing your order.

Forget the we—only the customer and the goods should enter into the transaction. The customer is interested more in himself than in the dealer's self—the personality entering into the advertising should deal with the customer, not with the seller. The sell, in an advertising sense, is merely an instrument or medium for getting certain goods into the possession of the customer.

WARDEN KING IN TORONTO.

After January 1, Warden King, Limited, will be represented in Ontario, with headquarters in the building they erected about four years ago at 21 to 27 Lombard Street, Toronto, by C. W. Webb, at present sales manager for the company at Montreal.

During the past four years Cluff Brothers, and later, the King Radiator Company, have been Ontario selling agents for Warden King, Limited, but this arrangement has been terminated and commencing with the new year the Ontario agency will be directly under the Montreal office with Mr. Webb as Ontario manager.

In addition to Daisy boilers, the agency will carry a full stock of radiators, steamfittings and radiator valves, soil pipe and fittings, stable fittings, and other equipment manufactured by the Warden King Company.

Mr. Webb, who is an Ottawa boy originally, speaks enthusiastically about the business outlook and the trade done during the past year. "Our trade showed an increase of nearly one-third this year, and our credits have been more satisfactory than for several years past" said Mr. Webb. "our losses in bad debts on account of loose credits were very heavy in Ontario two and three years ago, but this year we kept accounts very closely and although we have spent about $50,000 on new machinery and factory equipment this summer, we are in better shape than ever before. And under the new arrangement we hope to see an even larger increase in our Ontario business next year.

KING BOILERS

"STEEL AND RADIATION

WE have decided that the only way in which we can obtain a boiler to suit our customers in every respect, and one which we can guarantee with absolute confidence, is to have it designed by experts and make it ourselves!

We have therefore discontinued handling the "Daisy" and "Viking" Boilers, and, with a view to "CUTTING OUT THE KICKS" so common with all other boilers, we will make and sell SOLELY the

"KING" BOILER

PERSONAL SUPERVISION from the inception of the design till the completed boiler is ready for delivery, will be the watchword of the "KING" BOILER, and it will embody every improvement that really makes for practical efficiency.

Only the highest quality of castings will be used, and the special design of its internal combustion chambers will guarantee the maximum heat for the minimum of fuel consumption.

In a very short time the "KING" BOILER will be the best-known Boiler in Canada, and our full-page advertisement in every issue of "Plumber and Steamfitter" will keep you fully informed of its many points of superiority.

STEEL AND RADI

Head Office—Fraser

Toronto Showrooms---78 to

Montreal Branch—1

Agencies and Stocks for "Steel and Radiation" P

STANDARD PRODUCTS!

IT is with confidence that we recommend the "KING" RADIATOR to the trade, because we are convinced that the thorough and exhaustive tests which we apply to each completed Radiator preclude any possibility of trouble arising from leakage once it has been installed. The

"KING" RADIATOR

is a screwed nipple Radiator, and each section is guaranteed to have the FULL AMOUNT OF RATED SURFACE. The patterns, both in plain and ornamental styles, will be found to be extremely artistic, and the relief ornamentations are such as to readily lend themselves to interior decorative schemes.

The "King" Radiator is made in many special forms to suit individual requirements.

STEAMFITTERS' SPECIALITIES

We handle a full line of supplies, including valves, tools, pipe, pipe connections. All valves and tools sold have our absolute guarantee that they are the highest quality in their respective lines.

May we quote you on your requirements? We invite the fullest inspection and enquiry!

ATION, LIMITED

Avenue, Toronto
Adelaide Street East.
Craig Street.
ducts in all the leading cities in Canada

The Question Box

Subscribers are Urged to Send Questions to be Answered, or to Comment on Letters Published. Descriptions of Jobs Done or Shop Kinks are Also Invited.

THE PURPOSE OF EXPANSION TANK.

Editor Plumber and Steamfitter—To one who is not thoroughly up on all points of the game, will you not kindly explain the purpose served by the expansion tank, the manner in which it is connected and its size.

Calgary, Dec. 6 P.L.H.

If the water were confined in the system and no provision made for the water's expansion some place in the system would certainly burst. At 212 deg. water has expanded somewhat more than one twenty-fourth of its volume, so you can at once see that more room will be required. This is generally provided for by making use of a tank, called the expansion tank, which is, in size at least one twentieth of the cubical contents of the pipes, the radiators and the boiler, according to some of the recognized authorities on the subject. In placing the expansion tank on a low pressure hot water job, it should be located at least two feet above the highest radiator of the system on which it is used. The tank should be provided with an overflow so fixed that it will not be in any danger of freezing, and if this danger should arise, the tank should be made a part of the circulating sys- —D.C.H.

CHIMNEY BRUSH.

Editor Plumber and Steamfitter,—Can you please advise me where I can procure a 10 in. glue or chimney brush head.—T.G.D.

Kenora, Nov. 24.

The United Factories, York St., Toronto.—Editor's Note.

DROPPING RANGE BOILER.

Editor Plumber and Steamfitter,—Is it possible to locate the range boiler in the cellar below the waterback in the [illegible]?—M.

Oshawa, Dec. 11.

It is possible, and, if the hot water supply pipe is carried high enough before it is dropped to the boiler, you will get a circulation. Otherwise you will have a poor job on your hands. If the room in the kitchen is limited, why not install the range boiler horizontally immediately over the range? This has been done in hundreds of cases and has [illegible] —D.C.H.

A COIL FOR THE WATERBACK.

Editor Plumber and Steamfitter,—Would a coil made of pipe be any advantage over the ordinary iron waterback as regards their liability of being frequently stopped up with lime?—L.L

Ottawa, Dec. 2.

We are inclined to think that there would be no advantage in using the pipe. In some cases the lime and magnesia will form on the pipe very much quicker than on the waterback. There are what is called automatic water softeners upon the market and, in a case where the trouble with the waterbacks occurs, these softeners may be used with excellent success.—D.C.H.

BRONZE THE BACK OF RADIATOR.

Editor Plumber and Steamfitter,—In finishing off the radiator, would it be best to paint or bronze it as the case may be?—Inquiry.

Toronto, Dec. 6.

We should give the back of the radiator at least one coat. It would not be necessary to finish it up with the same degree of care as is used on the top and front, but we believe that it should have some attention. If you examine the backs of radiators that have been neither painted or bronzed you will find that their condition is anything but clean and that in many cases some rust has accumulated.—D.C.H.

A LOCATION WANTED.

Editor Plumber and Steamfiitter,—I would be very much obliged if you would let me know where I could start a business, any place going west 50 to 200 miles from Ottawa, in the plumbing, heating and metal working line. I would go in with a hardware merchant or anyone wanting to go into business of that kind. J. L.

Ottawa, Nov. 14.

Editor's Note.—Can any reader give the desired information?

THAT "CLICKING" NOISE.

Editor Plumber and Steamfitter,—I notice that when the steam gets up on certain jobs that I have seen, or when the job seems to be cooling off, there is sometimes a peculiar clicking noise, which is sometimes very unpleasant, about the radiators or the pipe lines. Can you tell me what it is, and how to cure it? "STEAMFITTER."

Vancouver, Dec. 10.

We presume that the noise that you allude to is caused by the expansion and the contraction of the iron. Hammering would make a much different and a louder noise. Probably the fitter who put in the work did not make any allowance for the expansion and the job is very rigid. We believe that the matter can be helped by so arranging the mains and branches that the expansion will not come in such a manner as to cause the radiator to slide. Try it and see for yourself.—D. C. H.

TRADES SCHOOLS.

C. McCauley, Alliston, states that he has read a large number of technical books on plumbing and tinsmithing secured from The Plumber & Steamfitter, Toronto. He now thinks that he would like to take a course in a trade school.

The Educational Department of the Y.M.C.A., Buffalo, conduct a plumbing trade school. Others are the New York Trade School, 1252 First Ave., New York, and the St. Louis Trades School, 4453 Olive Street, St. Louis.—Editor.

WAYNE OIL STORAGE TANKS.

The National Equipment Co., 21 to 27 Lombard Street, Toronto, who have been supplying plumbers and hardwaremen with water service systems and septic tanks for country houses, besides making tanks and pumps for storing gasolene in garages, have secured the agency for Canada and Newfoundland for the Wayne Oil Tank and Pump Co., Fort Wayne, Ind., and it is the intention of the company to institute an active campaign for business in installing self-measuring oil and gasolene storage outfits in stores, paint and varnish factories, garages, etc. The "Wayne" outfits have been endorsed by the National Board of Fire Underwriters, and they are so simple in construction that anyone who can thread pipe can make the connections necessary in the installation of an outfit.

M. J. Quinn, manager of the National Equipment Co., was formerly mechanical superintendent for the Ontario government.

Reckoning Time Here.

About the time that these lines appear in print the season's work will have been practically completed. The man in the shop will be "figuring" just where he gets off at. I most sincerely trust that he may find his season's work has netted him a good profit. If so, the question arises, "can you not do better next year?"

If, unfortunately, the business should show a loss, what then are you going to do about it? In either case why not take the time during the duller part of the year to plan a regular selling campaign for the business for the coming year?

The Value of Ideas.

The best conducted, most progressive, best paying businesses in the country spend thousands upon thousands of dollars for ideas; for educating their employes, in advertising, in planning regular campaigns; but the average plumber seems to think that he can just float along and neglect these methods which have come to the front to meet the needs of the present day.

"Just float along." That represents the condition of more in the business than would look well in print. "Floating along" when, if the right of the matter were established, the plumber would be pretty much directing the whole darned current. This would not be because he was a plumber (as some seem to think their due) but because he was a thoroughly tried out level headed business man able to cope successfully with whatever events that might arise in his life.

Sizes of Traps, Waste, Main and Drain Pipes

Provisions of the Plumbing Code Recently Adopted at Cleveland, Ohio, Governing the Sizes of Traps, Waste and Soil Pipe Branches, Stacks and House Drains.

Section 147 of the new Cleveland Plumbing Code reads: "No fixture trap shall be placed on any house drain less than one (1) foot above the crown of a main sewer or any back water level except in cases where it is absolutely necessary to install floor drain or fixtures below such level. They shall all be placed on the same branch main provided with both a gate valve and automatic back water valve so placed as to control all such fixtures. The gate valve shall be placed before the automatic, except that where a cellar drain only is installed, a clean-out only will be required."

Section 148 reads: "Where house drains are laid below the level of the house sewer connections, they shall discharge into a sump, and be automatically lifted and discharged into the house sewer."

The accompanying chart reproduced from Domestic Engineering, shows the back pressure construction required where the fixture trap is less than one foot above the crown of the main sewer. It will be found near the top of plan No. 1, in the centre.

The problem is to locate a sink, slop sink, closet and lavatory on a basement floor where certain of the traps will be placed not less than one foot above the crown of the main sewer. A plan of the house receiving these fixtures is shown at the top of plan No. 1, and in addition to showing the location of the fixtures it shows the size of the main drain, closet waste and soil pipe connection must be 4 inches. The lavatory and sink wastes may be 2 inches, and the slop sink 3 inches. It also shows where the clean-outs should be located. If all the traps on these fixtures were more than one foot above the crown of the main sewer the design of the job could be as shown at the top of the plan.

In case a slop sink only is used the arrangement is as shown at the left of the centre of the plan.

Sizes of House Drains.

Section 34 of the Code provides for the minimum sizes of house drains with rain water leaders, and reads as follows:

"The following table gives the minimum sizes of metal house drains, mains of the maximum number of small fixtures, or their equivalent for larger ones that may be connected therewith, when laid at the grades indicated; for crock house drains or sewers the diameter shall be one size larger for the same number of fixtures."

For instant reference I have had the table referred to in the foregoing section placed on the chart, and the table shows the required minimum sizes of house drains when they receive (a.) wastes and rain water only. (b.) Soil, waste and rain water.

In transforming roof or yard area to terms of fixtures, each 20 square feet of roof or yard horizontally projected area counts as one fixture.

Some other transformations into the equivalents of fixtures are:—Three feet of urinal trough, three feet of wash sink, one bath, one lavatory, one sink counts as one fixture, while one pedestal urinal, one slop hopper or one water closet counts as two fixtures.

Application of the Chart.

If the roof area is 30 x 60 feet, or 1,800 square feet, that area is equivalent to 90 fixtures and the downspout should be three inches, or, if exposed to frost, one size larger.

In the chart the plan of the piping shown just above the table is supposed to receive waste products from the following:

1,800 square feet of roof, counting as 90 fixtures.

Sink counting as one fixture.

Slop sink counting as two fixtures.

Water closet counting as two fixtures.

Lavatory counting as one fixture.

This makes a total of 96 fixtures if the plumbing is on one floor only.

If the drain is laid at a gradient of one in one hundred it will have to be four inches.

Add to the 96 fixtures as provided for in the foregoing paragraph the plumbing on a second floor, consisting of:

One sink counting as one fixture.

One slop sink counting as two fixtures

One water closet counting as two fixtures.

One bath counting as one fixture.

One lavatory counting as one fixture.

This adds 7 fixtures to 96 previously provided for, or 103 in all. The house drain could still be four inches in diameter. A third floor with the equivalent of 7 fixtures and even a fourth floor could be added without increasing the diameter of the house drain. If, however, the total number of fixtures exceed 118, the house drain would either have to be increased to five inches or its gradient increased to two in one hundred.

This shows how the proper size of the house drain may be determined for any size building. Thus, if laid at one in one hundred, the six-inch house drain shown in the lowest of the three piping plans would receive the equivalent of 343 fixtures; if laid two in a hundred, 488 fixtures; if laid three in a hundred, 585 fixtures, and if four in a hundred, 731 fixtures.

When rain water does not enter the house drain, and it receives soil and waste only, its size shall be determined by the rules laid down for branch soil and waste pipe (shown below), except in no case may a house drain receiving soil waste be less than four inches nor more than twelve inches in diameter.

Waste Soil Pipe Stacks.

The data sheet published on page 90 in our issue of October 23, 1909, gives the required sizes of waste and soil pipe stacks but as it has a close bearing on the sizes of house drains I venture to repeat its publication here.

The maximum number of fixtures connected to a waste or soil pipe branch or main stack shall be:

Table showing the number of fixtures which may be connected to various sized branch and main soil pipes and waste pipes under the provisions of the Cleveland Code, Sections 1120—34, 1120—35 and 1120—36.

Size of pipe.	Water closets on soil pipe alone.		Fixtures on soil and waste combined.		Fixtures on waste pipe alone.	
	Branch.	Main.	Branch.	Main.	Branch	Main
4	12	24	48	96	72	144
5	24	48	96	192	144	288
6	42	84	168	336	252	504
7	70	140	280	560		
8	105	210	420	840		
9	145	290	580	1160		
10	200	400	200	1600		
11	265	530	1060	2120		
12	355	710	420	2840		

In the foregoing table, so far as determining the sizes of waste pipes is concerned, the following notation of fixtures and equivalent is used :

Fixtures provided with :

1¼-inch traps count as one fixture.
1½-inch traps count as one fixture.
2-inch traps count as two fixtures.
2½-inch traps count as three fixtures.
3-inch traps count as four fixtures.
4-inch traps count as five fixtures.

The following table shows the number of fixtures which may be allowed on branch and main wastes of various sizes :

Table showing number of fixtures which may be allowed on branch and main wastes of various sizes under the provisions of the Cleveland Plumbing Code, Section 1120—37.

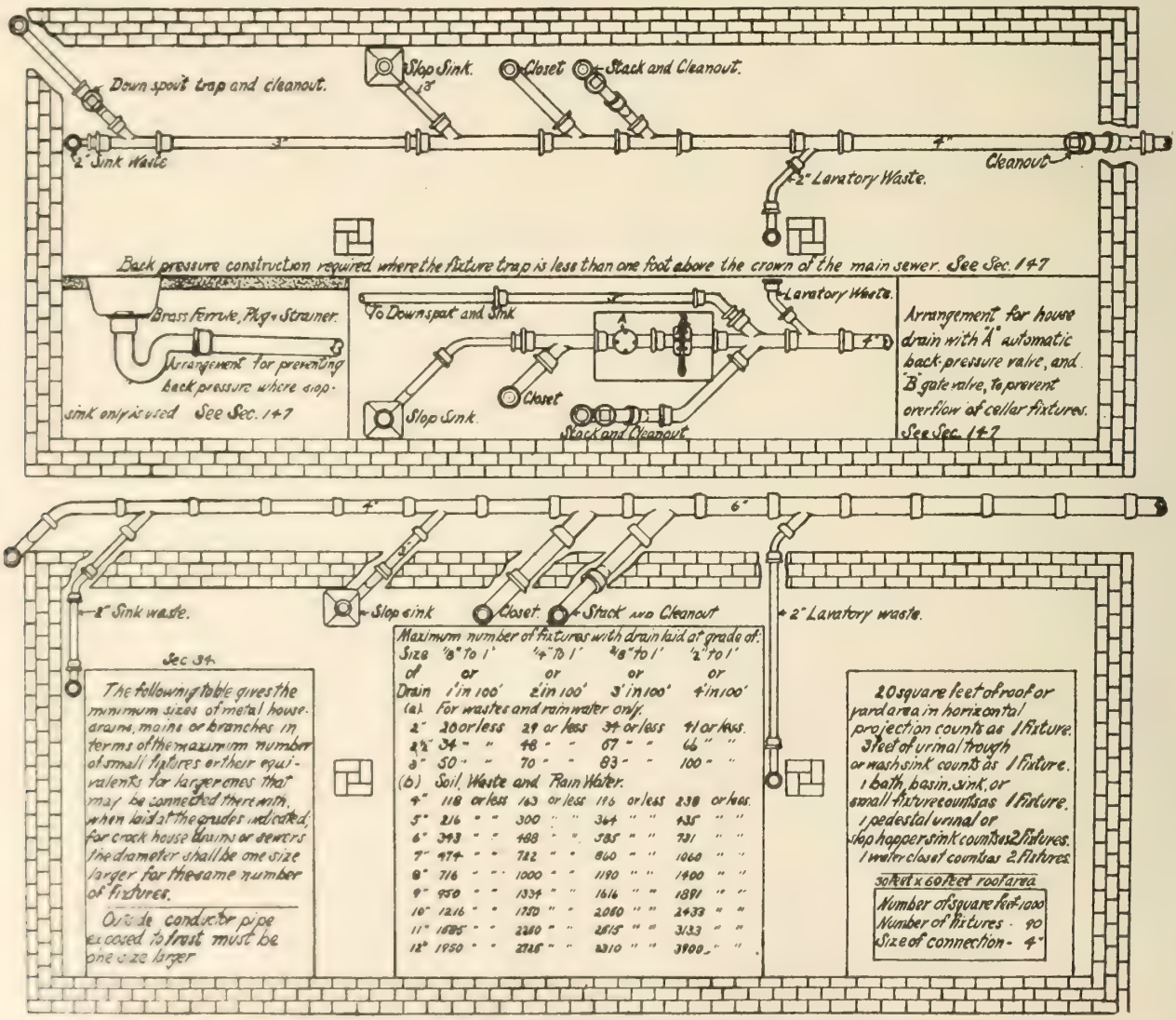
Sizes of waste pipe in inches.	Number of fixtures allowed on Branch waste.	Main waste.
1¼	1	0
1½	3 or less	3 or less
2	10 or less	20 or less
2½	16 or less	32 or less
3	30 or less	60 or less
4	72 or less	144 or less
5	144 or less	288 or less
6	252 or less	504 or less

Sizes of Traps.

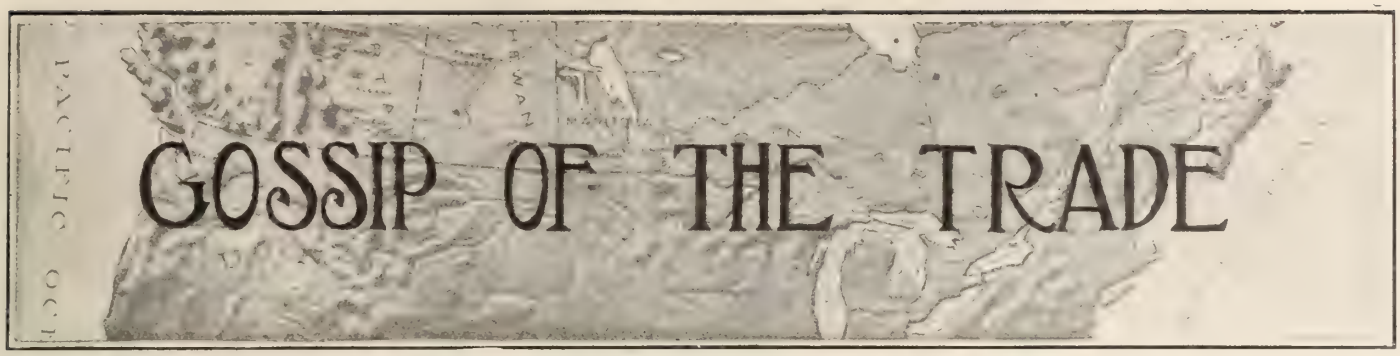
The following table shows the minimum size of trap required on each fixture and the size of branch waste which must be used for it :

Table showing the minimum size of trap required under each plumbing fixture and the size of branch waste which it must be provided with, according to the provisions of the Cleveland Plumbing Code, Section 1120—38.

Name of Fixture.	Size in inches of Trap required.	Branch waste.
Water closet	3	4
Slop sink with trap combined	3	3
Slop sink, ordinary pattern	2	2
Pedestal urinal	3	3
Urinal trough	2	2
Floor drain or wash	3	3
Yard drain or catchbasin...	3	3
Laundry trays (one to three)	1½	1½
Laundry trays (four to six)	2	2
Kitchen sinks (small dwellings)	1¼	1¼
Kitchen sinks (large hotels)	1½	1½
Sinks, pantry or bar	1¼	1¼
Sinks, pantry (hotel)	1½	1½
Lavatory, single	1¼	1¼
Lavatory (group of 2 or 3)	1½	1½
Bath tub	1¼	1¼
Bath, shower	2	2
Bath, sitz	1¼	1¼
Safe waste and drip	1	1
Fountains, drinking	1¼	1¼
Fountains, cuspidor	1¼	1¼


Down spout trap and cleanout.
Slop Sink.
Closet
Stack and Cleanout.
2" Sink Waste
3"
4"
Cleanout
2" Lavatory Waste.
Back pressure construction required where the fixture trap is less than one foot above the crown of the main sewer. See Sec. 147
Brass Ferrule, Plug & Strainer.
Arrangement for preventing back pressure where slop-sink only is used See Sec. 147
To Downspout and Sink
Lavatory Waste.
Closet
Slop Sink.
Stack and Cleanout
Arrangement for house drain with "A" automatic back-pressure valve, and "B" gate valve, to prevent overflow of cellar fixtures. See Sec. 147
4"
6"
2" Sink waste.
Slop sink
Closet
Stack and Cleanout
2" Lavatory waste.
Sec 34.
The following table gives the minimum sizes of metal house-drains, mains or branches in terms of the maximum number of small fixtures or their equivalents for larger ones that may be connected thereto, when laid at the grades indicated, for cast house drains or sewers the diameter shall be one size larger for the same number of fixtures.
Outside conductor pipe exposed to frost must be one size larger
Maximum number of fixtures with drain laid at grade of:
Size of Drain
1/8" to 1' or 1" in 100'
1/4" to 1' or 2" in 100'
1/2" to 1' or 3" in 100'
1" to 1' or 4" in 100'
(a). For wastes and rain water only.
2" 20 or less 29 or less 34 or less 41 or less.
2½" 34 " " 48 " " 67 " " 66 " "
3" 50 " " 70 " " 83 " " 100 " "
(b) Soil, Waste and Rain Water.
4" 118 or less 163 or less 116 or less 238 or less.
5" 216 " " 300 " " 364 " " 435 " "
6" 343 " " 498 " " 585 " " 731 " "
7" 474 " " 722 " " 860 " " 1060 " "
8" 716 " " 1000 " " 1190 " " 1400 " "
9" 950 " " 1334 " " 1616 " " 1891 " "
10" 1216 " " 1750 " " 2060 " " 2433 " "
11" 1685 " " 2280 " " 2615 " " 3133 " "
12" 1950 " " 2715 " " 3310 " " 3900 " "
20 square feet of roof or yard area in horizontal projection counts as 1 fixture.
3 feet of urinal trough or wash sink counts as 1 fixture.
1 bath, basin, sink, or small fixture counts as 1 fixture.
1 pedestal urinal or slop hopper sink counts as 2 fixtures.
1 water closet counts as 2 fixtures.
50 feet x 60 feet roof area
Number of square feet 1000
Number of fixtures - 90
Size of connection - 4"

Plan Showing Application of the Cleveland Plumbing Code Illustrating Back Pressure Construction Where Required and Giving Sizes of Pipes With Number of Fixtures Permitted.



Narcisse Breton, plumber, Montreal, has assigned.

H. Charpentier, plumbers, Montreal, have registered.

Therriault & Malette, plumbers, Montreal, have registered.

W. Watts & Co. have started a plumbing business at Saskatoon.

E. F. Johnson has started a plumbing business at Creston, B.C.

The death is recorded of J. O. Dallaire, plumber, St. Boniface, Que.

The Manstone Heating & Plumbing Co., New Westminster, have wound up business.

Poitras & Bourque, plumbers and roofers, Montreal, have dissolved partnership.

Revelstoke, B.C., has appointed a plumbing inspector in the person of W. Ruecastle.

E. R. Gates, Rainy River, has moved into the store formerly occupied by the Gazette Book store.

Mr. Millyer, Enderby, B.C., has completed a big plumbing contract at the Bellevue Hotel, Sicamous.

C. J. Lemire is installing the steam heating apparatus in the Prince of Wales Hotel, Wetaskiwin, Alta.

A new health by-law is being prepared in Guelph, which calls for the appointment of a new sanitary inspector with a salary of $800 to $1,000.

Business is reported to have fallen off slightly in Calgary during the past week, but all firms are still fairly busy. Prospects for next year are said to be the best possible.

Bolduc & McLean, plumbers, Montreal, have dissolved partnership.

T. F. Maguire, Minneapolis, is installing the steam-heating plant at the Delight Theatre, Estevan, Sask.

Scott & Bennett, Galt, a plumbing firm who have successfully handled electric fixtures and appliances, have been awarded the contract for wiring the post office, in preparation for lighting that building by electricity.

Harry McGee, who has been in charge of W. E. Forbes' plumbing department, Richibucto, N.B., has gone to St. John. Later he will go to Campbellton, where Mr. Forbes has some plumbing contracts.

J. B. Morris, manager of the Montreal branch of the Dominion Radiator Co., spent several days in Toronto during the past week. "Joe" was kept busy renewing friendships with old acquaintances and boosting the advantages of Montreal as a business centre.

E. S. Coppins, Woodstock, Ont., has completed the plumbing, steam heating and ventilating contracts for the two new schools there. The electric motors will be installed as soon as the hydro-electric power is turned on. At the present time, the schools can be ventilated with the gravity system.

The Guelph Board of Trade has appointed Mayor Hastings, Ald. Mahoney and Dr. H. O. Howitt, Medical Health Officer, to investigate the charges made by Guelph township that the city sewage is polluting the Speed river. An expert will be engaged to examine the disposal works and see what grounds there are for the complaint.

Niagara-on-the-Lake, Ont., has had a "boom" in building operations and the plumbing trade has been kept busy. McKenzie & Nolan have begun a number of large contracts, including the installation of heating appliances at "Randwood," the summer home of Mr. Rand, of Buffalo, plumbing work at the residence of Mrs. Coleman, and at Thomas Stewart's new dwelling.

City Engineer Rust, Toronto, has made a tour of numerous cities to gather information with reference to the application of a company to establish a heating system in Rosedale. In some cities no charge is made for laying pipes under the streets, but in others 2 per cent. of the gross receipts is charged. He says that the plant will be able to distribute heat only within two miles of the pumping station.

At the session of the Royal Commission on Techical Education at Victoria, B.C., William Thacker, plumber, gave evidence with reference to the need of industrial training in the plumbing trade. He had served a six years' apprenticeship in England and had received much benefit from taking technical and practical courses for two years, attending two classes a week. He considered the most good would be done by teaching both theoretical and practical work, including the wiping of joints and practice with models.

Garrett Frankland and Lewis Legrow were on the first car that was bombarded in the Toronto street car riot on the night of Wednesday, Dec. 7. While crossing Yonge at King, a shower of bricks assailed the car and the occupants escaped injury only by throwing themselves flat on the floor. Nearly every window was smashed and a great variety of bricks and missiles littered the car but luckily no one was hurt. "G. F." carried away one brick as a souvenir.

F. C. Hunt, a London, Ont., plumber, had an exciting experience on Sunday, Dec. 4. About 2.30 in the morning some dust in a register on the first floor of his residence, 621 Richmond St., took fire. Mr. Hunt did not stop to ascertain the extent of the conflagration but started off to turn in an alarm, habited in—well, not exactly in full dress attire. Undaunted by the elements, he ran a block barefooted through the snow to the nearest alarm station and soon had the brigade on the spot. The firemen discovered, however, that the members of the family had extinguished the blaze in the meantime, before any serious damage had been done.

PLUMBING SUPERVISOR FOR TORONTO.

The creation of a new office, that of supervisor of plumbing inspectors, was announced in Toronto on Tuesday, Dec. 6. The new official will have power to make a fixed interpretation of all clauses of the health regulations with reference to plumbing work. In other words, the inspectors will judge work according to the reading placed by the supervisor on the clauses relating to that phase of the work. The arrangement promises to effectually do away with the bickering and confusion which has so often resulted in the past from the varying ideas and the divergent interpretations placed by the different inspectors on plumbing regulations. The supervisor will be William H. Meadows, one of the present staff of inspectors. He will take up his new duties as soon as an acting inspector is appointed to take his place.

Mr. Meadows was born in Toronto and has lived in that city all his life. It is a curious coincidence indeed that the health office in the city hall is situated almost directly over the spot where the old home of Mr. Meadows

stood. He was born in one of two houses which stood on James Street far back from the road. These houses were afterwards removed and the property used for a lumber yard. Finally that site was chosen for the city hall, and Mr. Meadows believes that the office where he is now engaged is almost directly above the spot where his old home stood.

The new supervisor started work as a plumber and at the time of his appointment as an inspector, 23 years ago, was in business for himself.

To Revise By-law.

There is also talk of a committee being appointed to consider amendments to the health by-law. It is proposed that this body be composed of two plumbers, two architects, two inspectors and a representative of the Builders' Exchange. The committee would consider the redrafting of regulations governing plumbing work in the city.

PRESENTATIONS TO OLD EMPLOYES.

Few things help more to instill a spirit of loyalty amongst a staff of employes than the recognition of faithful service, either by promotion or by the giving of presents at appropriate times, after years of labor.

Working upon this principle, J. T. Sheridan, president of the Pease Foundry Company, Toronto, last winter, as announced in The Plumber and Steamfitter at the time, promoted Wm. Crane, superintendent of the company's Shaw Street plant, and who had been with the company since 1884, to the position of boiler salesman in Toronto. Mr. Crane was a success in outside work, and the Pease Company had the best year in their history, both in hot air and hot water installations, so when Mr. Crane accepted a position with the Prudential Investment Company at Vancouver, the company and members of the office and sales staff both remembered him, the presentations taking place on Saturday, Nov. 26.

Mr. Sheridan also presented a token of his appreciation to James R. Phillips, for twenty years superintendent of the Sheridan foundry at New Toronto. During this period the capacity of the foundry has been increased several times, and in addition to many molding machines, seventy-five men are employed. Mr. Phillips has cut down foundry costs very materially by the invention of several devices, and although the foundry has been conducted as an open shop during this score of years there has never been a strike amongst the men, this being an excellent tribute to the qualities of faithful service and management which Mr. Sheridan sought to recognize.

The Pease Foundry Company have experienced a most satisfactory year, their business showing an increase of over 30 per cent. over 1909. The growth in the west, where the increase was over 50 per cent., was exceedingly satisfactory. Mr. Sheridan is now on a visit to the Pacific coast with the intention of making arrangements for a further expansion of the company's business in Western Canada.

VALUE OF DISPLAY ROOMS.

That it pays to spend some money in making a display of plumbing and lighting fixtures in the showroom instead of making it a dump for old fixtures and scrap gathered in from repair jobs, has been proven over and over again.

Hamilton & Stott, St. Thomas, Ont., are one of the many plumbing firms who have learned the value of such a display and the accompanying picture shows that not only is their shop kept in such a cleanly manner that any lady would feel at home in the shop but a young lady is also in attendance to keep the books and look after the wants of customers.

Interior of Hamilton & Stott's Shop at St. Thomas.

The picture shows a number of enameled fixtures, a few bathroom fittings, and a large number of gas fixtures, the wall lights being connected up to a gas pipe on the wall for demonstration purposes.

The office at the rear is also very business-like and visitors cannot help but be impressed with the fact that in addition to being good mechanics the members of the firm are also good business men.

HELD OYSTER SUPPER.

The second social evening of the series arranged by the Master Plumbers' Association of Toronto, was held on Friday, Dec. 2, with an increased attendance. The early part of the evening was spent in progressive euchre, ten games being played. The scores were collected at the finish and will be kept by the entertainment committee, who are giving a prize at the end of the year for the best total score made during the season. An oyster supper was then served, over thirty sitting down. The menu was found even more satisfying than at the previous social gathering.

After supper, President Cooper called upon G. E. Gibbard, Toronto, secretary of the Retail Merchants' Association, to speak and, in responding, Mr. Gibbard gave an earnest plea for completer organization on the part of the mercantile and plumbing trades to offset the ever increasing influence of the mergers. After a few words from The Plumber and Steamfitter representative, the evening was brought to a close by the singing of "Auld Lang Syne."

During the evening the services of Garrett F. Frankland, a member of the entertainment committee, were suitably rewarded. Mr. Frankland is not only an enthusiastic worker in the interests of the association but a great favorite on account of his ready fund of good humor. On behalf of the association, G. E. Gibbard handed him a large box which, on being opened, was found to contain a custard pie, a delicacy of which Mr. Frankland is avowedly fond. His appreciation of the gift was tangibly demonstrated.

A new plumbing supply business has been established at Calgary known as the Western Foundry & Metal Co., it being a reorganization of the Woodhall Metal Co.

A. E. Berryman, manager of Metals, Limited, Calgary, Edmonton and Lethbridge, has been spending a week in Toronto and Montreal, calling on the Gurney Foundry Co. and other trade connections.

By W. W.

Frank T. Rawley, Canadian representative of the Honeywell Heating Specialty Co., Wabash, Indiana, had an unusual experience last week, which is worth repeating. At the request of a customer he interviewed Property Commissioner Harris, and endeavored to sell him a number of heating generators for use on various municipal buildings in Toronto.

The popular conception of how buying is done by vivic officials is that certain favored friends are given orders without competition, that "pull" counts for more than merit, and that, in the case of the purchase of goods regarding which a technical knowledge is required in order to understand the merits or demerits of the articles, that the civic buyer, rather than expend energy in securing that technical knowledge, would adopt the easier method of calling in a subordinate having that knowledge and rely upon his advice in placing the order. Not so, however, in the instance referred to and herein is the point of the story.

Mr. Rawley, during his call upon Property Commissioner Harris, explained how the Honeywell heat generator operates in making hot water heating systems give better service, by improving the circulation in well installed systems and making them heat up more quickly after firing, and also how sluggish working systems can be made to give satisfactory service by the addition of a heating generator to the piping system. As eloquently as he could Mr. Rawley described the advantages of the Honeywell device, but some of his statements seemed impossible to Mr. Harris, who showed himself to be a keen listener and an intelligent questioner, having an intelligent grasp of the relative value of different systems of heating, steam, hot water, vacuum, etc.

Mr. Rawley thought that he was talking to Mr. Harris alone, but he must have also been talking to the Commissioner's stenographer as, when he called again a couple of days later on Mr. Harris' request, he found Commissioner Harris in fighting trim and ready to fight Mr. Rawley on his own ground, Asking Mr. Rawley if he was ready to back up his statements and have them compared with the works of the best known heating authorities, and receiving an affirmative answer, Mr. Harris touched a button and had a number of technical books brought to him. Hearing some of his statements quoted verbatim and realizing that Mr. Harris had been fortifying himself for the interview Mr. Rawley saw he was in for a warm time, and truly enough Mr. Harris put him through a most grilling examination.

Recovering from his surprise Mr. Rawley met theoretical statements with logical arguments and a most interesting discussion ensued. Bare statements needed corroboration, doubtful assertions had to be proved, authorities looked up, and nothing taken upon the mere "say-so" of the salesman. Each party in the discussion found the controversy educational, the salesman particularly so as the usual buyer is more intent upon discussing the price rather than the merits of the goods. And it was a surprise to him to find a civic buyer who wanted knowledge as well as goods. Too often men in authority settle questions with a wave of their hand, being unwilling to admit that the salesman has proven his case. The final result was that Mr. Harris admitted that the salesman knew his goods and had been able to substantiate the statements made in the first conversation. An order was consequently placed by the Property Commissioner for 40 of the Honeywell heat generators.

The moral in the story for salesmen (and this includes every man who has something to sell, even if it be only brain or manual labor power), is that it isn't safe to run a bluff, even on a buyer for a civic institution. Study and know intimately what you have to sell and success is within your grasp.

TO MAKE NEW BOILERS.

The Steel and Radiation Company, announce that after Jan. 1 next they will sell the "King" instead of the "Daisy" boiler, along with "King" radiators. Patterns are now being prepared for the "King," which will have many improvements of interest to the heating trade, including larger waterways, an improved water post to assist circulation, an improved fire pot in which there will be an increase in space to give proper combustion in the fire pot and sections, and in addition the very latest improvements in grates will be introduced. Patterns for another new boiler, the "Royal," are also being prepared.

The Steel & Radiation Co. are also removing their down town showrooms in Toronto from Lombard Street to 78 to 82 Adelaide Street east, just east of Church Street. This is the old Reference Library building. A new plate glass front is being put in and a stock of boilers, radiators, pipe and fittings will be carried, the premises adjoining those of the Canada Iron & Pipe Co. New warerooms are also to be opened at 138 Craig Street, Montreal, James Wilson, for many years with the John Ritchie Company, and for the past six months with the King Radiator Co., will be in charge of the Toronto warerooms.

In addition to the large site recently secured on the Lachine Canal, near Montreal for a new boiler and radiator plant to supply the eastern market, negotiations are in progress, according to Secretary Howard, for a 30 acre site for a boiler plant near Toronto, although a number of smaller sites in the city have also been inspected.

In the meantime, the H. R. Ives foundry at Montreal, has been acquired by the company, and an addition is at present being made to the King Radiator Co.'s plant on St. Helen's Avenue, Toronto, where a stock of pipe and fittings will be kept.

CANADIAN PLUMBER WINS PRIZE.

The Ideal Carriage Washer & Automatic Water Saver Co., 561 East Main St., Rochester, N. Y., announces that the contest for a suitable name for its new automatic water-closet combination has been closed, and that the name, "Auto-Silent," submitted by Frank Powers, a well-known master plumber of Lunenburg, Nova Scotia, has been adopted. Mr. Powers will receive a complete "Auto-Silent" closet with the invisible tank outfit, which is listed at $39.

ELECTRIC FIXTURES.

The Jas. Morrison Co., Toronto, have issued an electric fixture catalogue, containing 80 pages of illustrations. The volume is issued in loose leaf form, bound in green buckram, the intention being to issue new pages with later designs from time to time. The catalogue contains a wide assortment of fixtures ranging from the cheaper globes to the most elaborate and expensive styles on the market. Among the varieties shown are stand lights, desk lamps, portable lights and electric candle sticks, in polished, brush, lemon and hammered brass, black iron, verde antique (green), oxidized silver, gun metal, polished silver, oxidized copper and other less common forms.

Among the designs are chaste representations of flowers, dolphin lights, dragon lights, mirror designs and elaborate prism effects. To the prospective purchaser, the list offers a wide variety of pleasing, unique and sometimes bizarre designs and a most extensive range in values.

Work was commenced this month at the new factory of the Standard Sanitary Manufacturing Co., Toronto.

New Buildings, Water and Sewerage Systems

Opportunities Offered by Municipalities and Private Enterprise for New Plumbing, Heating, Ventilating or Sanitary Systems—Work Being Undertaken in Every Section of the Dominion.

Municipal Undertakings.

Gleichen, Alta., will spend $30,000 for waterworks and sewerage.

Strathcona ratepayers will vote to provide $70,000 for new sewers.

Ratepayers of London, Ont., will vote on a by-law to set aside $75,000 for a new city hall.

Kingston is to vote on a by-law to provide for $13,000 to extend the street lighting system.

Vancouver has awarded the contract for vitrified sewer pipe to Colin Jackson for $3,119.

Calgary may pave Ninth Ave. from Third Street west, to the river, at a cost of $146,410.85.

Victoria, B.C., defeated the by-law to expropriate the Esquimalt Water Company's works at Coldstream.

Ratepayers of Listowel will vote on a by-law to raise $5,000 to complete the erection of electric light works.

Pembroke ratepayers will vote on a by-law to provide $65,000 for the extension of the waterworks system.

Quebec city will apply to the local legislature for an amendment to the charter, permitting the city to borrow $500,000 for civic improvements.

It is expected that by spring, Weston, Ont., will have completed the installation of a waterworks system at a cost of about $60,000.

Tenders for delivery during spring and summer of 1911 of water pipes, hydrants, gate valves, valve boxes, pig lead, oakum, standard vitrified sewer pipe, will be received until Feb. 1, 1911, at Souris, Man.

Vancouver ratepayers will vote on a by-law to spend $200,000 on waterworks improvements. This amount is not intended in any way to cover the extension of the water system on the north side of the inlet, which is to cost $690,000.

The joint committees of Vancouver and South Vancouver have decided to spend $1,000,000 for sewer construction.

The Hassam Paving Co. is to pave Third Street, New Westminster, B.C., at a cost of $44,760.

Ratepayers of Fort William will be called upon to vote in January on by-laws totalling almost $500,000. The amounts are apportioned as follows: Park by-law, $12,000; market site, $40,000; street railway, $100,000; light and telephone, $50,000; waterworks, $60,000; board of works, $8,000; abattoir, $100,000; quarry, $25,000; publicity, $10,000, and swimming pool, $20,000.

Public Buildings.

Fredericton, N.B., is to build a new fire station.

A fire hall annex is being built at Fort William, Ont., to cost $16,698.

Chatham, Ont., citizens are to erect a Chautauqua theatre.

Merritt, B.C., is to have a new post office, to cost $10,000.

Work will be started in the spring on the G. T. P. depot at Regina, Sask.

A Roman Catholic church to cost $10,000, will be erected at Lethbridge, Alta.

Calgary ratepayers will vote on a by-law to grant $150,000 towards a university.

A Buddhist temple, costing $15,000, is being erected on Albert St., Vancouver, B. C.

The County of Wellington will erect a new Court House at Guelph, to cost $125,000.

Stratford ratepayers will vote on a by-law to raise $15,000 for a market shelter.

Plans have been prepared for the erection of a municipal building at Outremont, Que.

Hull, Que., will purchase the property of Judge Champagne, as a site for the public hospital.

Calgary, Alta., is considering the establishment of an incinerator at a cost of $50,000.

The Vancouver Conservative club are preparing plans for a 10-storey building, to cost $450,000.

The ratepayers of Swift Current, Sask., are to vote on expending $25,000 for a new hospital.

Hamilton, Ont., ratepayers will vote on a by-law to raise $35,000 for a site for the new hospital.

Plans have been prepared for the new college at Calgary. The building will be of red brick and stone.

The Vancouver Athletic Club and the Commercial Club may put up an 8-storey building in Vancouver, to cost $230,000.

The Great American Industrial College is planning a college in Edmonton, Alta., to cost $3,000,000, and occupy 1,500 acres.

Plans for a $134,000 nurses' home and meeting hall for patients in connection with the Protestant Hospital for Insane in Montreal, have been drawn. A promise of half the amount has been received.

General Building.

T. J. S. Skinner is to erect a 7-storey building in Calgary.

A canning factory is to be established at Blenheim, Ont.

The McLaughlin Automobile Co. are to build in London.

J. H. Mitchell is building a $50,000 block in Prince Albert, Sask.

The Kerby House, Brantford, is to be improved at an outlay of $5,000.

The B. C. Telephone Co. will erect a new exchange at Kamloops, B.C.

A new hotel, in connection with the C. P. R., is planned in London, Ont.

A modern building is to be erected by the Merchants Bank, at Oakville, Ont.

The American Pad and Textile Co. will build a $20,000 factory at Chatham, Ont.

Guelph is considering the establishment of a co-operative furniture factory.

The Western Trust Co. has plans for the erection of an office building at Regina, Sask.

The Bank of Ottawa is building a branch building in Vancouver, 8 storeys and basement.

Donnellan & Donnellan are to build a 12-storey business block in Vancouver, to cost $500,000.

Wedin Bros., Midale, Sask., general machinists, were burned out at a total loss of $30,000.

The Royal George Hotel, Brandon, is being enlarged by the building of an extra storey.

William Garson, Winnipeg, has contracted to build a hotel at Calgary, at a cost of $140,000.

The Canada Box and Barrel Co. have selected a site for their new factory at Pembroke, Ont.

The Imperial Fur Co. will erect a $20,000 hotel at Imperial, B. C., to be completed by April, 1911.

Jonathan Rogers is building a 10-storey office block in Vancouver, at an estimated cost of $500,000.

David Gibb & Son will build a reinforced concrete and steel building in Vancouver, to cost $300,000.

Fergus ratepayers will vote on by-laws to loan $25,000 to Beattie Bros., and to take stock in the People's Railway.

A campaign for a Y.M.C.A. is to be conducted at Portage La Prairie, under the auspices of the Young Women's Christian Temperance Union.

The Liberals of British Columbia will erect party headquarters in the shape of a skyscraper in Vancouver. It is understood that the site has already been selected.

Excavations have been made in Prince Albert, Sask., preparatory for construction in the spring on the following: block on First Ave. for F. C. McGuire; block on Central Avenue for J. H. Mitchell; block on Central Avenue for S. McLeod.

PLUMBING AND HEATING MARKETS

MONTREAL.

December 14.—Despite the growing coldness and the increasing difficulty of working in the open air, building is going on with unabated vigor. There are many apartment houses and flats not to say large business premises not yet ready for their interior fixings, so that supply houses are anticipating a continuance of the good trade that they have been experiencing for so many months.

At the present time there is very little slackening off in the pressure. Boilers and radiators are still going out as fast as they can be assembled, while baths, wash bowls, etc., are likewise active. Soil pipe, while naturally not quite so heavy in demand is still showing a call that is much above the average. Iron pipe is in steady request. Lead pipe and solder have had a little extra flurry, owing to the firmness in price and the anticipation in some quarters that quotations may advance. In these two lines some stocking up is noticed.

Prices all the way round are unchanged. The boiler and radiator makers are well together, while soil pipe is very firm under the good trade. Solder is very firm owing to the high price of tin, and some jobbers have cut off the concessions that they were giving on good round lots. Lead pipe is firm owing to the firmness in the crude lead market.

Soil Pipe.—There is still a very active call for soil pipe, building work going on interruptedly. The market is firm, and we quote medium and heavy 70 and 10.

Lead Pipe.—The evident desire on part of users to stock up in anticipation of an advance in lead pipe through the firmness of the crude metal market keeps a constant stream of orders going. Plenty of pipe, however, is being utilized at once. We quote pipe and waste 9c per lb. calking lead 4½c; traps and bends, 50c.

Solder.—The continued high figures ruling in the tin market keeps the price up in solder and where figures have not been advanced the same price has obtained both for large and small lots. There is some stocking up being done in anticipation of an advance. We quote half and half, 22c to 23c; wiping, 20½c.

Iron Pipe.—There is a good movement in iron pipe, and stocks in jobbers' hands are not heavy. The market is firm and we quote: ¼-in. black, 63; galvanized, 48; ⅜-in. black, 59; galvanized, 44; ½-in. black, 69; galvanized, 59; ¾ to 4-in. black, 7½; galvanized, 61½.

Radiators and Boilers.—The continuance of the building keeps the demand for boilers and radiators at good pressure, and with so many structures not yet ready for their interior fixtures a continuance of the demand is expected. The market is firm, and we quote: Steam boilers, 60 and 5; round hot water boilers, 50 and 10; hot water radiators, 50 and 7½; steam radiators, 50 and 7½ and 2½ per cent.

Enamelware.—There is an active demand for immediate shipment, and makers are hard pressed to meet with the call. Some good contracts have been placed for early spring shipment. Prices are firm.

Metals.—The tin market continues to rule high. Copper is a shade weaker. We quote: Tin 44c, copper, 14c; lead, 3 2-5; spelter, 6¼c.

TORONTO.

Toronto, Dec. 13.—The end of one of the best years in the history of the plumbing trade is now in sight. Conditions are still, however, fairly brisk. Despite the cold weather and the lateness of the season, the demand is sufficient to keep the supply houses busy. Plumbing supplies are, of course, falling off, but there is not a marked diminution yet in the volume of trade in heating lines.

With the close of the year so near at hand, manufacturers and jobbers are commencing to look back and review the business of the past twelvemonth. General satisfaction is expressed. The local manager of one large manufacturing concern stated unreservedly to-day that the year had been the best in the history of his company and that equally good times were expected in 1911.

No changes have been made in prices, but it is rumored that a reduction is pending in some lines of heaters.

Enamelware.—The demand is not as great, but orders are still being received for all lines, showing that the plumbing trade has not yet passed the installation stage.

Soil Pipe.—In this line the demand is now only nominal, owing to the setting in of severe weather. The shortage of light soil pipe continues, but little inconvenience is felt as there is practically no demand. Medium and heavy pipe go at 70 and 10; 7 and 8 inch sizes are quoted at 50 per cent.; fittings 70 and 10 off.

Lead Pipe.—There is more activity in lead pipe and prices remain quite stiff. Lead waste is going at 9c per lb. with 30 p.c. discount and caulking lead at 4½c. The quotation for traps and bends is 50 p.c.

Iron Pipe and Fittings—The trade continues rather more than seasonably active with prices stationary. Malleable fittings are discounted at 37½ to 40 p.c.; cast iron fittings from 60c to 65c; cast iron bushings are selling at 70; malleable bushings at 65; nipples sel at 75 and 10, headers 60, flanged and malleable-lipped unions, 65 p.c.; galvanized pipe, $6.35; black pipe, 1-inch size, $4.70 per 100 feet.

Solder.—There has not been any appreciable falling off in solder. Half-and-half sells at 22c and 23c and wiping at 19c and 20c.

Brass Goods.—The manufacturers and jobbers find less difficulty in keeping up with the demand, but then brass goods are still moving briskly. Lighting fixtures are being sold to plumbers in larger bulk than ever before. The Christmas demand has resulted in a good trade in all brass goods.

Boilers and Radiators.—The heating branch is more busy than the plumbing lines at present. There has not been a great decline in the demand for boilers and radiators as yet but the end of the active period is not far off. Prices stay the same, discounts for hot water boilers and radiators being quoted at 50 and 10, with an extra 2½ for steam radiators.

BATH TUB TRUST INDICTED.

On December 6 the Federal Grand Jury at Detroit returned indictments against sixteen American firms manufacturing bathroom supplies and thirty-two individuals, officers of the companies concerned. The proceedings grew out of a civil suit to dissolve the alleged combination existing between the sixteen companies, hearings in which have been held in Chicago, Pittsburg and New York within the last forty days. The charge is that the defendants combined to restrain the trade of manufacturers and jobbers of common supplies by refusing to sell to jobbers handling the goods of the so-called independents, and also by the fixing of re-sale prices, and refusing to sell to jobbers who would not maintain those prices.

The proceedings have resulted from conditions which exist in the United States, but do not obtain in Canada. The trade in this country will not be affected in any sense by the outcome, whatever it may be.

NEW BRASS GOODS FACTORY.

Windsor, Dec. 8.—By the granting of the customary exceptions, Windsor has secured the Canadian branch of the Winkley Company, an American concern. A separate company, known as the Winkley Company of Canada, Ltd., has been incorporated, with a capital of $100,000. The concern will manufacture brass goods. Temporary quarters have been secured in Windsor, with the intention of starting manufacturing operations at once. If the necessary by-law is carried in January, a $15,000 factory will be erected.

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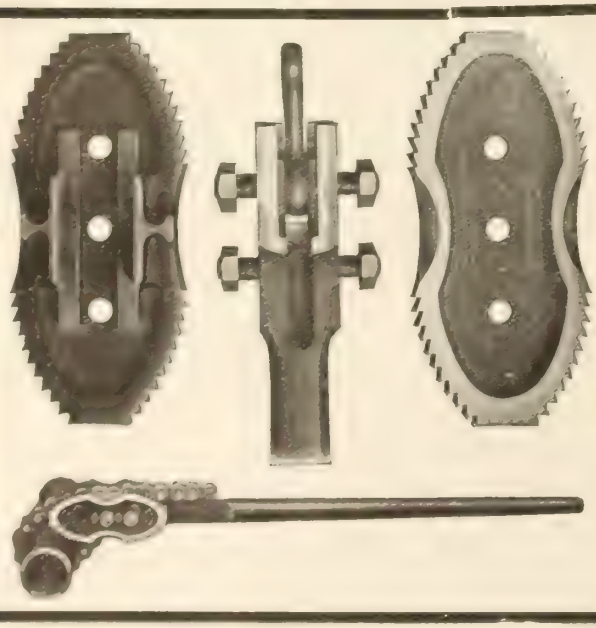

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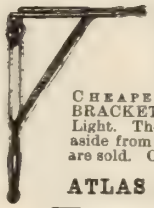

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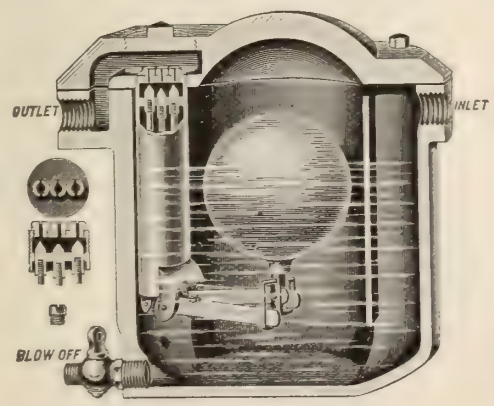

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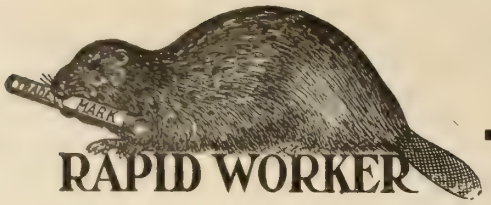

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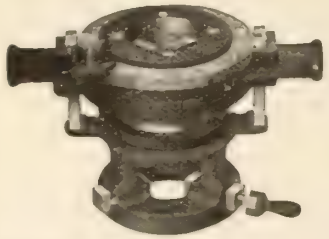

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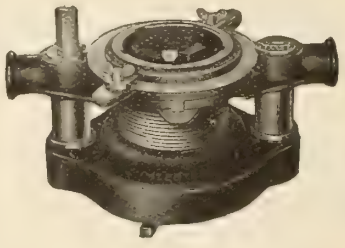

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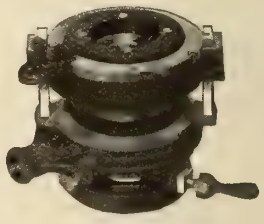

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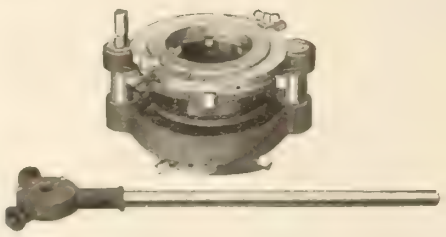

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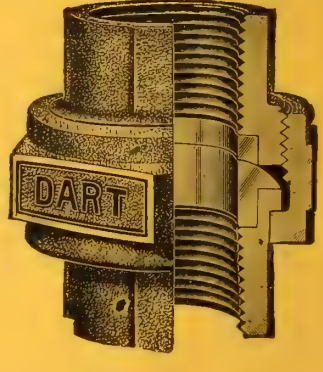

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